

Making Headway

Update to the TTC Capital Investment Plan 2022-2036



From the TTC Chair



I am very pleased to share this update to the TTC's Capital Investment Plan 2022-2036, *Making Headway*.

Over the past century, the TTC has played an integral role in the prosperity of the City of Toronto. The TTC has not only been vital to the economic growth of the region but more importantly, a critical lifeline for our riders who rely on the transit system every day for commuting and other essential activities such as grocery runs or medical appointments. The pandemic has underscored the importance of the TTC, as countless essential workers have relied on our services to get them where they needed to go.

Today, the TTC is the largest transit system in Canada, the third largest in North America and one of the most integrated transit systems in the world. We service a region of roughly six million people and steward \$20.1 billion in

assets. For the TTC to continue to support the Greater Toronto Area, an ongoing infrastructure investment – including both its facilities and its vehicles – is necessary.

As we continue transforming and modernizing our transit network, it is important that our assets and infrastructure are able to meet the changing demands of our riders. As the Chair of the TTC, I could not be more proud of the progress we have made to secure capital investment from all levels of government. Our strategic approach to capital planning is key part of this success.

When the TTC introduced its first Capital Investment Plan in 2019, we provided our stakeholders with valuable insights into the TTC's base capital needs over a 15-year period. The Plan identified that many of the TTC's essential capital projects were underfunded and, as a result, the TTC received more than \$5 billion in new capital funding commitments with support from all three levels of government.

The investments highlighted in this update to *Making Headway* will form the backbone of transit in Toronto for decades to come, just as the investments made in the TTC a century ago have shaped our City today. I want to thank all our partners for their support and continued investment in our future.

A handwritten signature in black ink that reads "Jaye Robinson".

Jaye Robinson
Chair, TTC

From the Chief Executive Officer



In January 2019, following a comprehensive asset review, the TTC issued its first-ever Capital Investment Plan (CIP).

The CIP provided our stakeholders with a full and clear view of the TTC's base capital needs over the next 15-years. It also showed how much of our capital program was unfunded – including many essential projects already approved by City Council.

The Plan very quickly served its intended purpose and the response from all three levels of government was immediate and incredible: we received more than \$5 billion in new capital funding commitments that allowed us to begin work to enhance subway capacity, procure new streetcars, continue the greening of our bus fleet through additional battery electric vehicles, and more. These were investments in the future of our city, our province, and our country.

In March 2020, the lives and livelihoods of our city were upended by a global pandemic. With unprecedented operating support from our government partners, we kept Toronto moving while advancing our capital program. We also took advantage of lower ridership to accelerate capital work and received \$568 million to enhance our streetcar fleet and facilities.

This update to the CIP highlights progress we've made together since January 2019 as well as the most immediate priorities that remain unfunded. Offering revised estimates and smoother cash flows, it also demonstrates that our approach to planning, managing and prioritizing Capital investments continues to mature.

One example is the TTC's first-ever Real Estate Investment Plan which provides a full strategic view of long-term real estate opportunities and requirements, including real estate needs that underpin key capital investments.

We are emerging from one of the toughest challenges in our 100-year history. With ongoing support and continued commitment from all orders of government, we will ensure that Toronto's transit system is ready for the growth this City and Region are expected to see over the coming decades.



Richard J. Leary
Chief Executive Officer
Toronto Transit Commission



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The pandemic revealed that public transit is essential for keeping our city moving, through good times and bad.

For the sake of Toronto's health and prosperity, we must keep investing in the future.

COVID-19 confronted Toronto and its transit system with historic challenges. With flexibility and determination, we met the moment together.

Over the first weeks of the pandemic, TTC ridership dropped nearly 86%. But we continued to support our city: using our vehicles and stations to deliver 3.4 million masks, retrofitting buses to assist the Toronto Paramedic Service, and retooling our fleet so that customers and staff could remain safely physically distanced. And with a demand-responsive service strategy for our bus network, we never stopped moving Toronto's most essential workers by putting service where it was needed most.

Thanks to more than \$1.3 billion in Safe Restart funding from the provincial and federal governments, we have navigated COVID-19

without service cuts or fare increases. We responded to reduced fare revenue by finding more than \$303 million in savings. We even accelerated ongoing capital projects and essential maintenance work by using 10-day closures for the first time, taking advantage of low ridership to make major progress.

As Toronto's recovery picks up speed, our customers will depend on safe, seamless, reliable transit service as they return to work and school, reconnect with loved ones and communities, rebuild businesses – and bring our city back to life.

2021 marked the TTC's 100th anniversary, which illustrates the key role we play in Toronto's growth – and hints at the advanced age of some of our assets. Today, as one of the world's most integrated transit systems, we steward \$20.1 billion in assets to serve a region of nearly six million people. A flourishing future for the GTA requires ongoing investment in the TTC's fleet, facilities, and system infrastructure.

Over the past several years, the TTC has progressed towards a more predictable, sustainable, and strategic approach to its capital investments, supported by all three levels of government. But if we fail to continue investing, the risks are great. Transit systems that neglect base capital investment find themselves trapped in a vicious cycle. As investment in maintenance falls behind, transit breaks down more frequently. Customer trust rapidly sinks and the cost of fixing worn-out infrastructure balloons. If that happens, the transit expansion Toronto needs will fall out of reach.

The stakes are even higher as the pandemic recedes, when we need to actively win our customers back to public transit. Offering a safe and reassuring experience will help

rebuild the TTC's ridership and avoid an unsustainable car-based recovery.

Robust public transit also underpins many of the City's core priorities, including TransformTO (climate action), Vision Zero (road safety), MoveTO (traffic congestion), ActiveTO (active transportation), RapidTO (bus route speed and capacity), Housing Now (affordable housing), CreateTO (real estate), and ModernTO (office modernization).

Only by thinking strategically about our unfunded priorities can we remain an essential partner for Toronto and its citizens for the next hundred years – and be as prepared as possible for future disruptions such as a global pandemic.



Meeting TTC Service Objectives and Outcomes

Continued capital investment enables the TTC to meet its service objectives as mobility evolves, the city recovers, and the region grows.

Objective	Outcome	
Provide Safe, Seamless, and Reliable Transit Service	Customer Satisfaction	
Transform to Solidify Fiscal Foundation	Financial Sustainability	
Lead as an Inclusive and Accessible Service Provider	Inclusion and Accessibility	
Innovate for Future Demand	System Resiliency	

Investing in a Green, Equitable, and Innovative Future

New capital investment enables us to seize opportunities to deliver a safer, fairer, more environmentally sustainable future.

Equitable

From our Easier Access program at stations to fully accessible vehicles, new capital investments are core to making Toronto's transit system barrier-free and accessible to all. At the same time, our procurement policy seeks to advance supply chain diversity to drive inclusive economic growth.

Innovative

Capital investment means new opportunities to improve safety and operational efficiency. For our buses and Wheel-Trans vehicles, this includes exploring technologies like driver safety assist systems, enhancing turn warning systems, and connected autonomous vehicles. Meanwhile, new technologies are improving a range of mission-critical systems, including transit security, transit control, automatic train control signalling system, cybersecurity and enterprise asset management.

Sustainable

Our capital investments play a key role in achieving the City's TransformTO Net Zero target by 2040. This includes rapidly moving towards a zero emissions fleet, greening our supply chain, and de-carbonizing the construction and operation of our buildings.

This update to the TTC's Capital Investment Plan reflects progress made since 2019, identifies our most immediate unfunded priorities, and refines cost projections for capital investment over the next 15 years.

For the last several years, the TTC has been adopting best practices for an integrated approach to asset management, capital planning, project management, and financial management. The result is a clear view of the TTC's requirements, which can enable steadier-state investment in public transit. Considering long lead times as well as core interdependencies, it is intended to limit ballooning costs and strengthen our financial sustainability.

This update is accompanied by the TTC's first-ever Real Estate Investment Plan, reinforcing our co-ordinated and fiscally responsible approach to managing long-term investments.

Our integrated approach recognizes that all base capital investments must advance in lockstep.

Fleets, facilities, and system infrastructure are interdependent, and they cannot function without supporting investments in business modernization, information technology, administration, and real estate. If we underinvest in one category, the entire system is weakened.

This Plan is not a fully costed or a detailed budget. Estimates provided here are subject to further refinement over time. But we must continue to responsibly and strategically plan for long-term investment in the TTC, even without final figures. And while the operational effects of COVID-19 have been serious and demand patterns may yet change, the pandemic has not fundamentally changed the TTC's long-term outlook.



What are base capital investments?

Base capital investments are investments in our current fleet, facilities and infrastructure, as distinct from planned expansion projects such as new subway extensions. Base capital investments include undertaking major state-of-good-repair maintenance to preserve current levels of service, replacing vehicles, infrastructure and equipment at the end of their life-cycle, and making improvements to increase capacity and support projected ridership demand.



How does the TTC arrive at capital cost estimates?

In many cases, the estimates in this Plan are preliminary rough order-of-magnitude projections intended for planning purposes only. The planning and design of large capital projects proceeds through a series of “stage gates,” which increase certainty and accountability, and reduce risk. At each gate, estimates are further refined. As a result, these estimates will inevitably be subject to change.



What is the impact of partial funding?

Partial funding may advance certain projects, but many larger projects require complete funding to proceed – for instance, to take advantage of economies of scale or to ensure that we do not start major projects that we cannot finish. Committing to full funding avoids delays, improves efficiency, and guarantees the complete benefits of investment.

Funding Progress Since 2019

A new Toronto-Ontario Transit Partnership in October 2019 recognized the need for critical unfunded subway state-of-good-repair needs

Bloor-Yonge Station Capacity Improvement deemed a priority project through a \$1.5 billion tripartite funding commitment from all three levels of government

City Council approved a tax levy increase to raise \$4.73 billion in new City Building Funds dedicated to TTC capital needs

All three levels of government committed \$568 million in new funding to purchase 60 streetcars and expand the Hillcrest Complex

An additional \$1.3 billion for state-of-good-repair, safety, legislated, and other projects was funded through the recalibration of 10-year capital estimates, smoothing of ongoing state-of-good-repair spend, and eligible development charge funding of \$323.7 million



New funding is making possible...



Enhanced Bloor-Yonge Station
\$1.5B



New hybrid and electric buses
\$686M



Line 1 Automatic Train Control
\$623M*



60 New streetcars
\$468M

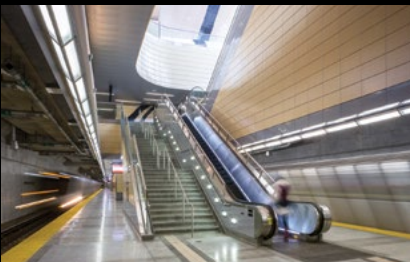


Hillcrest streetcar storage
\$100M



Electric bus charging
\$64M

New funding is making it possible to start...



Line 1 Capacity Enhancement
\$1.49B



Line 2 Capacity Enhancement
\$817M



New subway trains
\$623M**











Other SOGR projects
\$158M


* Over the 10-year period, with the balance to be funded in the post-years ** Funding insufficient to proceed with procurement

Investment Scorecard

Reliability and On-Time Performance

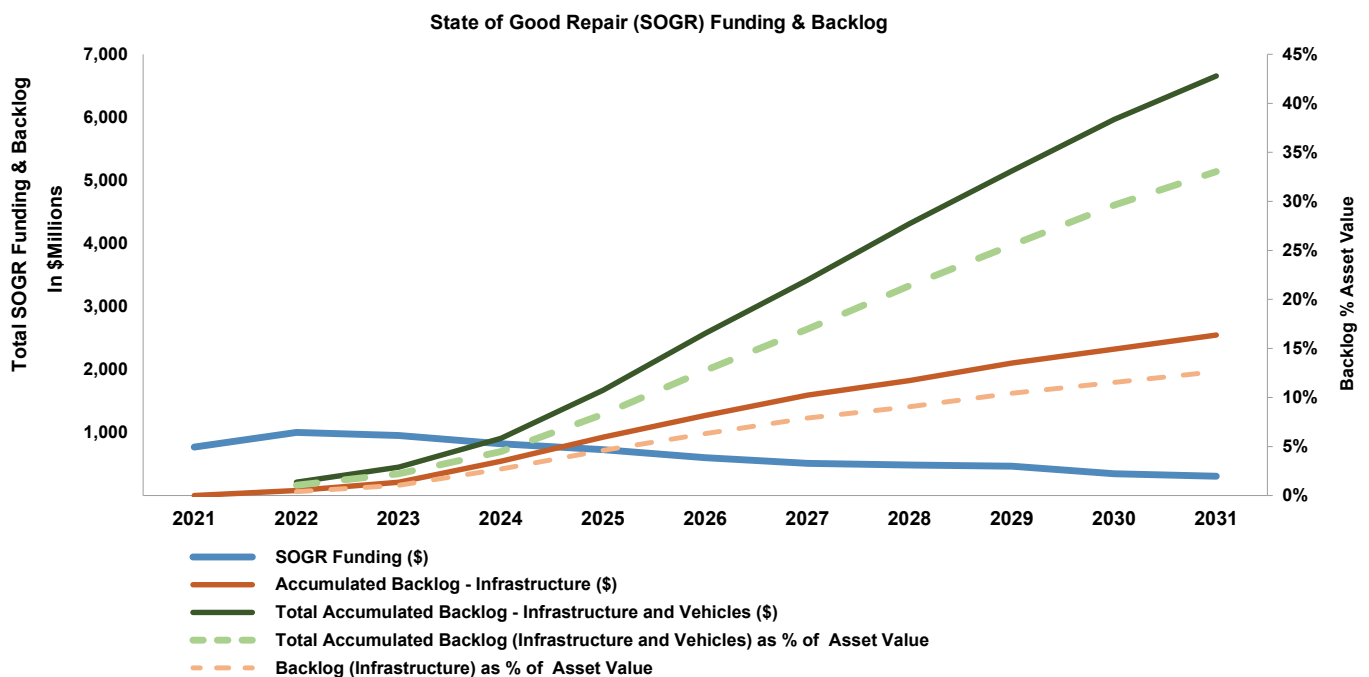
Ongoing maintenance and replacement of our assets results in more timely, reliable service for our customers.

	Reliability	On-Time Performance
Subway – Line 1		
Subway – Line 2		
Streetcars		
Buses		

 Meeting or Exceeding Expectations  Improving

State-of-Good-Repair Backlog

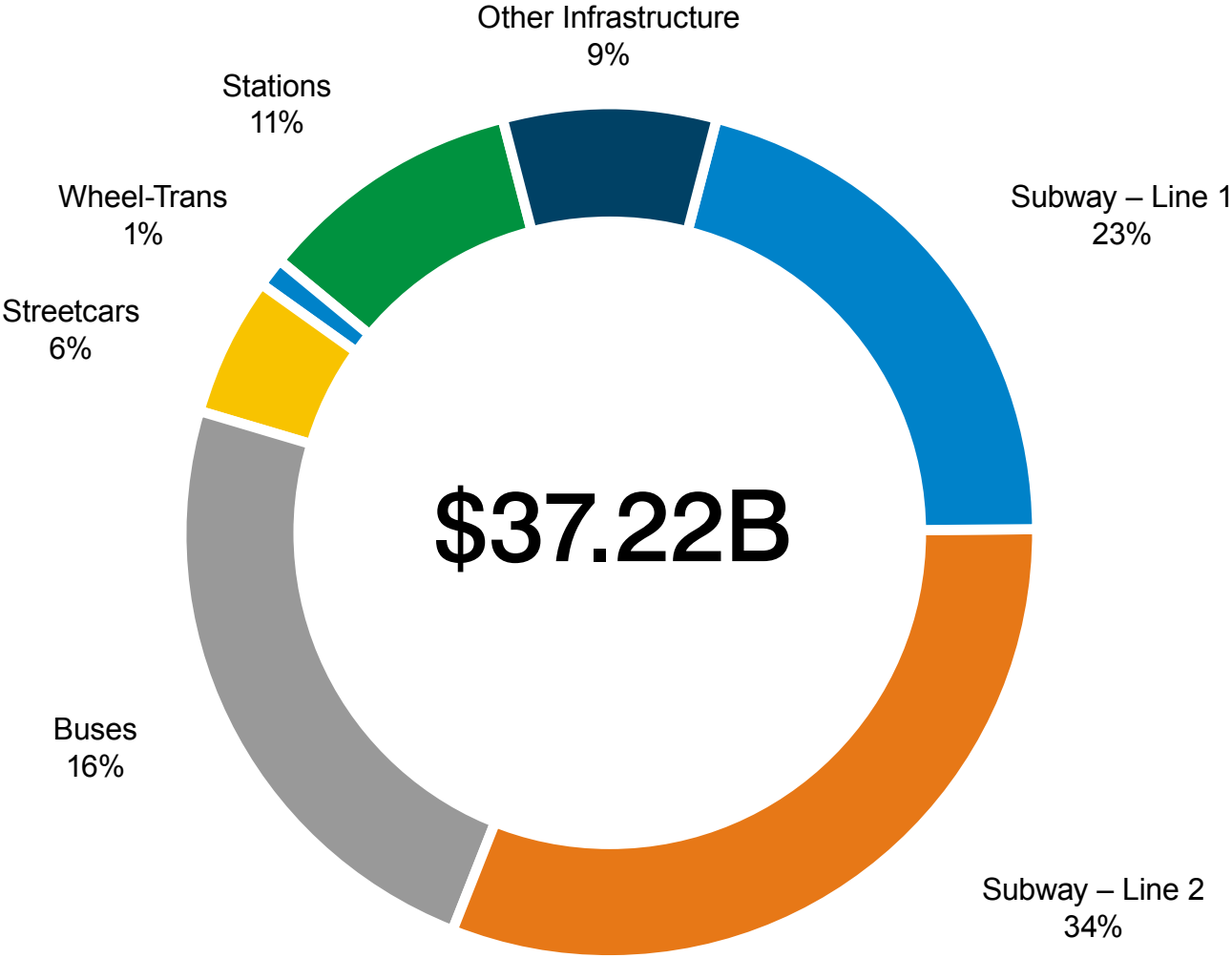
Compared to the 2019 baseline set by the original Capital Investment Plan, our backlog of deferred maintenance is lower in the near-term. But it will balloon quickly after 2023 without increased, and predictable vehicle and infrastructure funding.



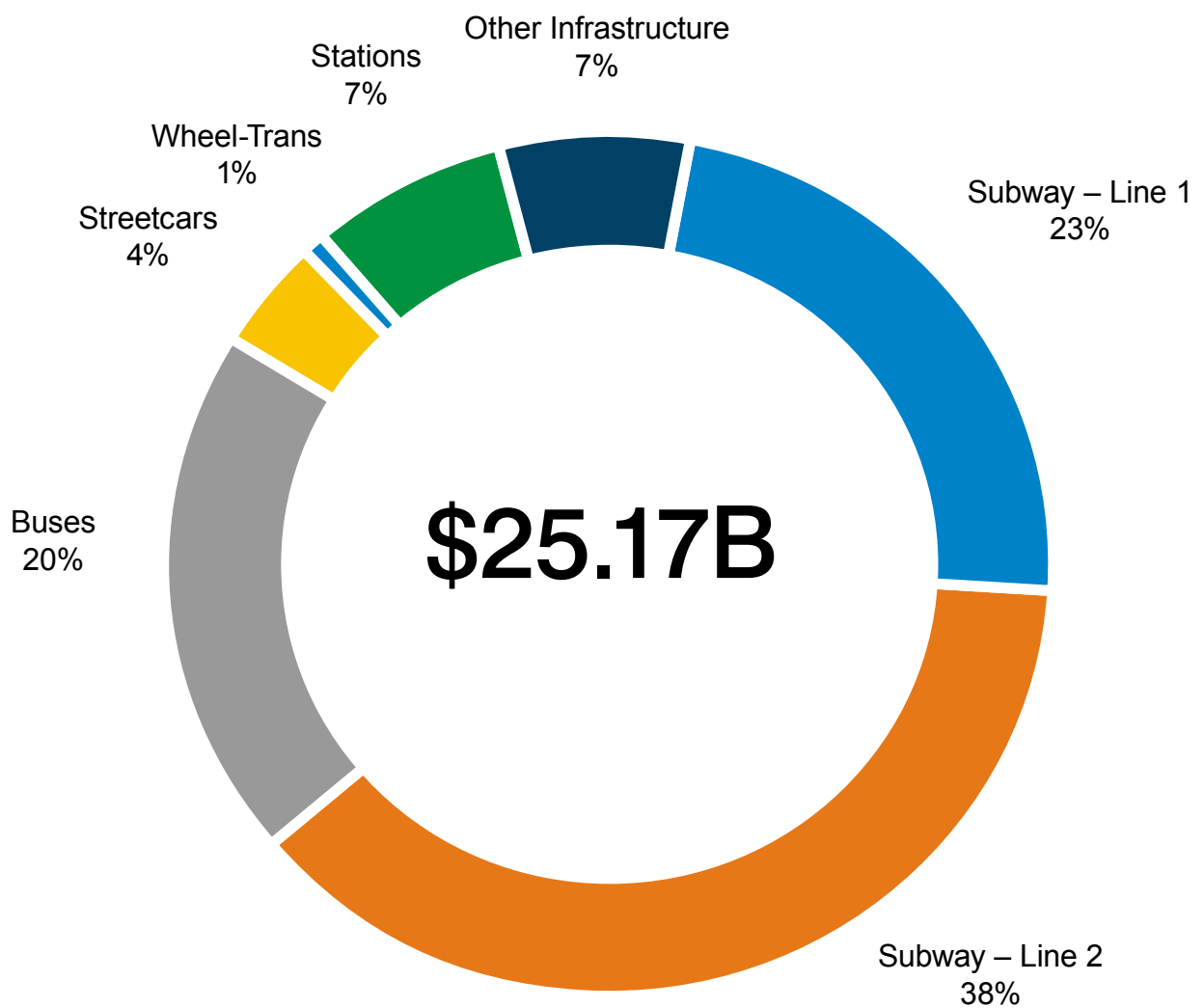
Investment Summary

2022-2036

Total Required Base Capital Investment



Unfunded Capital Investment



Immediate Funding Priorities

A number of priority projects remain unfunded over the next five years.

Each project belongs to a larger program of investment that is essential for future transit service. Most represent critical interdependencies that, if delayed, would jeopardize the larger program.

PRIORITY PROJECTS REQUIRING FUNDING 2022-2031

Modernizing the Subway and Expanding Capacity

Purchase subway trains	\$1.7B	by 2022
Maintenance and Storage Facility	\$2.4B	by 2023
Modify Greenwood Yard	\$95M	by 2023

Transforming and Electrifying Bus Service*

Purchase electric buses	\$1.6B	by 2022
Purchase Wheel-Trans buses	\$174M	by 2022
Install charging infrastructure	\$509M	by 2022
Implement transit priority measures	\$356M	by 2023

Supporting a Larger Streetcar Fleet

Renew Russell Carhouse	\$71M	by 2024
Upgrade overhead power	\$19M	by 2023
Maximize Hillcrest Complex	\$3M	by 2023

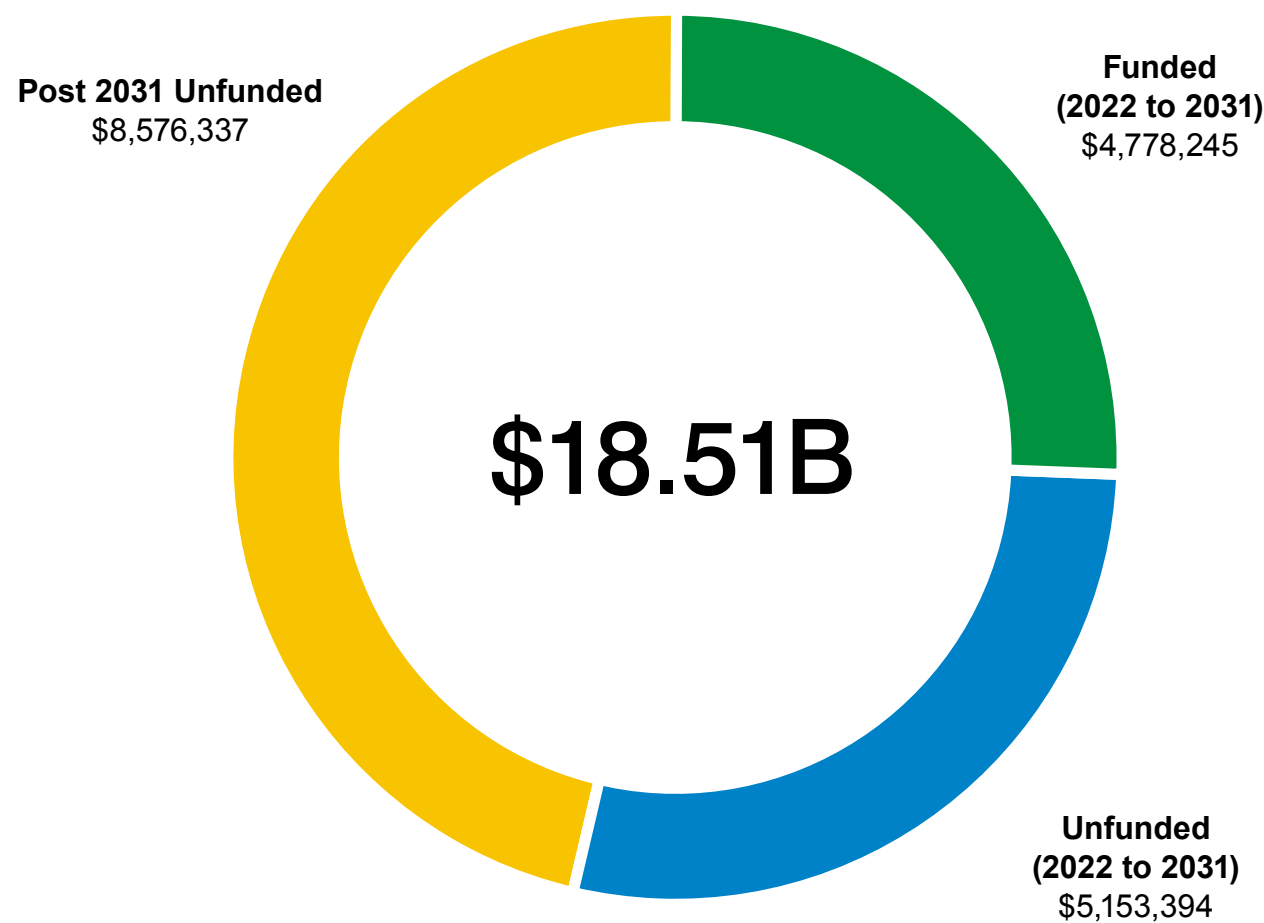
Upholding the State-of-Good-Repair*

Scheduled fleet maintenance	\$1.2B	by 2023
Safety and legislative	\$39M	by 2023
System maintenance	\$45M	by 2023
Operational infrastructure	\$135M	by 2023

* Funding required starting in the year identified with opportunity to phase in multi-year commitments over the 10-year horizon and/or to establish steady-state, predictable funding.

Modernizing the Subway and Expanding Capacity

Modernizing the Subways and Expanding Capacity
(\$ thousands)



Including the unfunded priorities on the following pages, as well as \$9.87B in other investments required to modernize the subway and expand capacity.

Trains on Line 2 were scheduled to reach the end of their useful lives in 2026. We can retire these trains two years later due to lower use during the pandemic

However, investing to procure the next generation of subway trains by 2028, while ensuring railyards have the capacity to accommodate them, remains a critical near-term priority.

Next generation trains will also enable growth through automatic train control on Line 2 and secure additional trains to match future demand on Line 1.

Toronto's 67-year-old subway system has been undergoing a capital-intensive modernization to move more customers with more frequent service, fewer delays and more consistent travel times. Any future expansion that adds riders, whether the Line 1 Yonge North Subway Extension, the Ontario Line, or the Line 2 East Extension, will depend on this effort to deliver the benefits of increased capacity.

Improvements to enhance capacity on Line 1 are partially funded through 2031, leaving key projects, such as a new maintenance and storage facility in time for the delivery of new trains, unfunded. The capacity enhancement of Line 2, a multi-year project extending to the post years of the CIP is fully funded to 2024 and partially thereafter.

Progress

\$623M in new funding for subway trains, enough to fund 27% of total order

\$2.66B in funding for Line 1 and 2 Capacity Enhancement and Line 2 ATC to 2031

Line 1 Automatic Train Control on track for completion in 2022





We need 80 new subway trains...

Why?

To replace 55 Line 2 trains starting in 2028 and add 25 new trains for more frequent service on Line 1 made possible by Automatic Train Control. Economies of scale require that full unfunded amount be secured prior to procurement.

1981

The last time Line 2 received brand-new trains only

**Immediate
Funding Required**
\$1.7 billion

Fund by
2022

Deliver by
2028-2031

Remainder Unfunded
\$0





So we need to add storage and maintenance capacity...

Why?

Before the new trains can be delivered, a new maintenance and storage facility must be built in the north to serve more trains running on Line 1, including property acquisition, planning, and construction.

31 trains

The number of trains the new facility will store

**Immediate
Funding Required**
\$2.4 billion

Fund by
2023

Deliver by
2031

Remainder Unfunded
\$0





And we need to modify Greenwood Yard.

Why?

To accommodate the modern, higher capacity fleet, the 55-year-old yard (as well as its carhouse and shop) needs to be reconfigured and updated. This includes resignalling with ATC-ready signals and switches, and retrofitting facilities to enable servicing of roof-mounted systems on trains.

54 trains

Current storage capacity at Greenwood Yard

**Immediate
Funding Required**
\$95 million

Fund by
2023

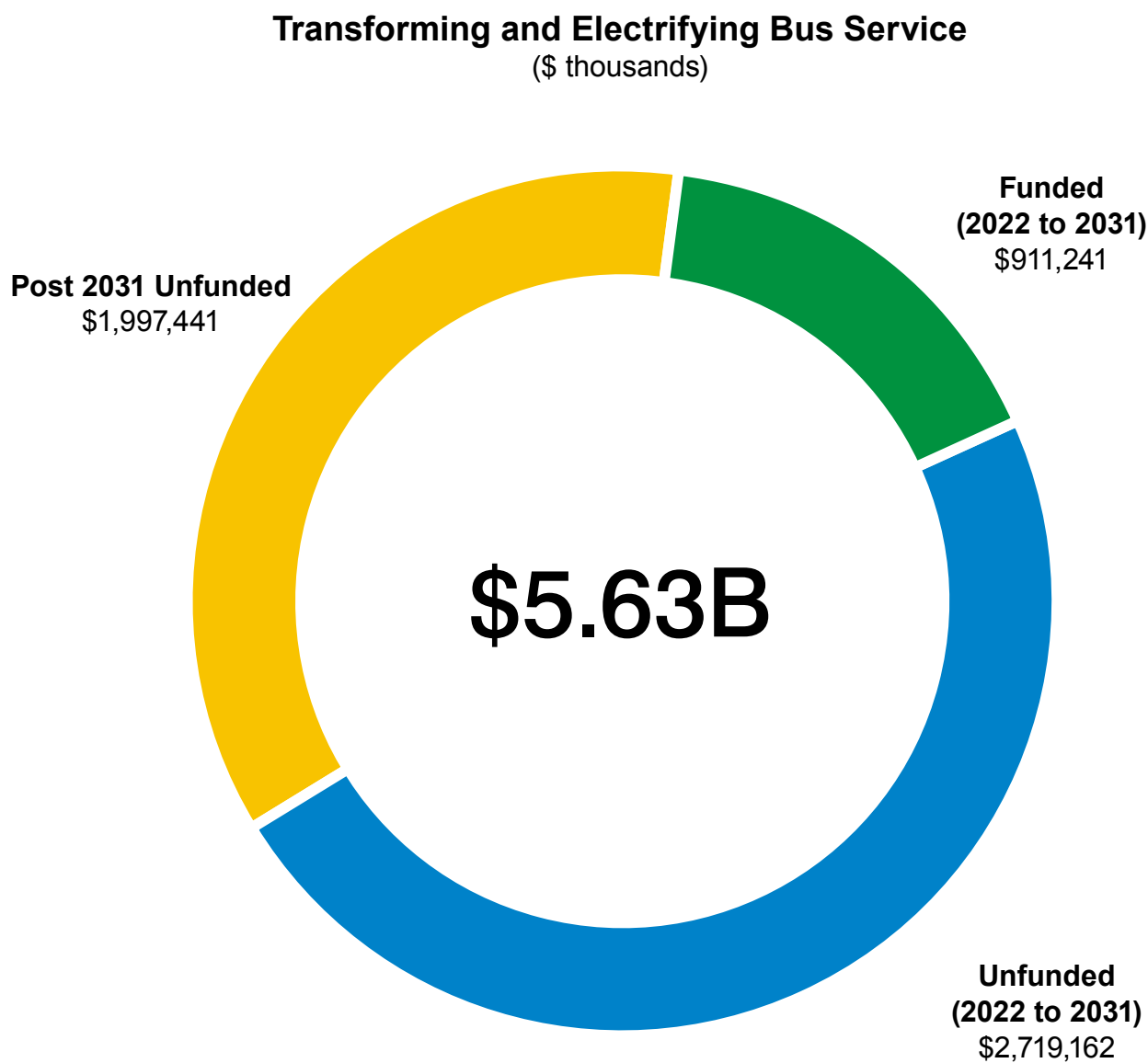
Deliver by
2028

**Remainder Unfunded
(2032-2036)**
\$196M





Transforming and Electrifying Bus Service



Including the unfunded priorities on the following pages, as well as \$2.07B in other investments required to transform bus service and convert to an all-electric fleet.

Electric buses, charging infrastructure, and increased priority for buses in traffic are essential for a greener and more equitable Toronto.

Toronto is committed to a zero-emissions bus fleet as a critical step to achieve Net Zero by 2040. The TTC's current fleet of 60 battery electric buses is the largest green fleet in North America.

In the coming decade, both procurement of electric buses and installation of charging infrastructure will have to ramp up quickly. Accordingly, we have entered a landmark agreement with Toronto Hydro and PowerON Energy Solutions, a subsidiary of Ontario Power Generation, to implement electrification infrastructure for the TTC's entire fleet of over 2,000 buses, working closely with the City of Toronto to enable a modal shift to the use of active transportation and a zero-emissions transit system.

Continued demand for bus service during COVID-19 reinforced the crucial role our bus network plays in transporting Toronto's most essential workers. Service improvements such as the implementation of priority bus lanes will increase reliability and speed of service, while changes to bus stops will improve accessibility. And when it comes to capital investment, our strategy to make better use of existing facilities means a tenth garage will not be needed until the late 2030s.

Progress

\$686 million in new funding for approximately 600 buses

McNicol Bus Garage, which can store up to 250 buses, opened March 2021

3 of 9 garages equipped to accommodate TTC's current fleet of zero-emissions buses, the largest in North America





We need to procure 1,226 all-electric buses...

Why?

Due to the planned opening of the Eglinton and Finch LRTs, our procurement of 60 new streetcars, and other measures, we require 150 fewer buses than we originally projected in 2019. Beyond that, we must replace buses (2,196) at the end of their lifecycle with long range, zero-emissions vehicles to maintain projected service levels and meet the 2040 Net Zero target.

\$50–\$60 million

Estimated annual net fuel cost savings once the entire fleet is electrified

**Immediate
Funding Required**
\$1.6B

Fund by
2022

Deliver by
2023-2031

**Remainder Unfunded
(2032-2036)**
\$1.31B (970 buses)





And an additional 382 Wheel-Trans buses...

Why?

To begin electrifying our Wheel-Trans fleet each year at the end of their lifecycle, complementing 180 buses already funded. This is fewer buses than projected in our first CIP, given the success of our Wheel-Trans Transformation Program so far that is making our conventional system more accessible.

11,000
Daily trips taken on Wheel-Trans pre-pandemic

**Immediate
Funding Required**
\$174 million

Fund by
2022

Deliver by
2023-2031

**Remainder Unfunded
(2032-2036)**
\$116M





Which will require charging infrastructure...

Why?

To support charging of electric buses/WT buses at TTC garages, along with on-route charging as needed. While \$64 million in funding secured as part of the City Building Fund will address needs in 2022 and 2023, we have much more work to do to fully electrify the TTC's bus infrastructure and with reduced noise and air pollution, the health and well-being of Torontonians will be improved.

**Over 200,000 metric tons
Estimated annual GHG saved by converting to an
electric fleet**

**Immediate
Funding Required
\$509M**

**Fund by
2022**

**Deliver by
2023-2031**

**Remainder Unfunded
(2026-2035)
\$181M**





While cutting through congestion on the city's busiest bus routes.

Why?

With the RapidTO implementation of dedicated bus lanes on Toronto's busiest corridors combined with Transit Priority projects and other service improvements, we can ensure improved reliability, travel times, and capacity.

1.3 million
Average weekday bus boardings pre-pandemic

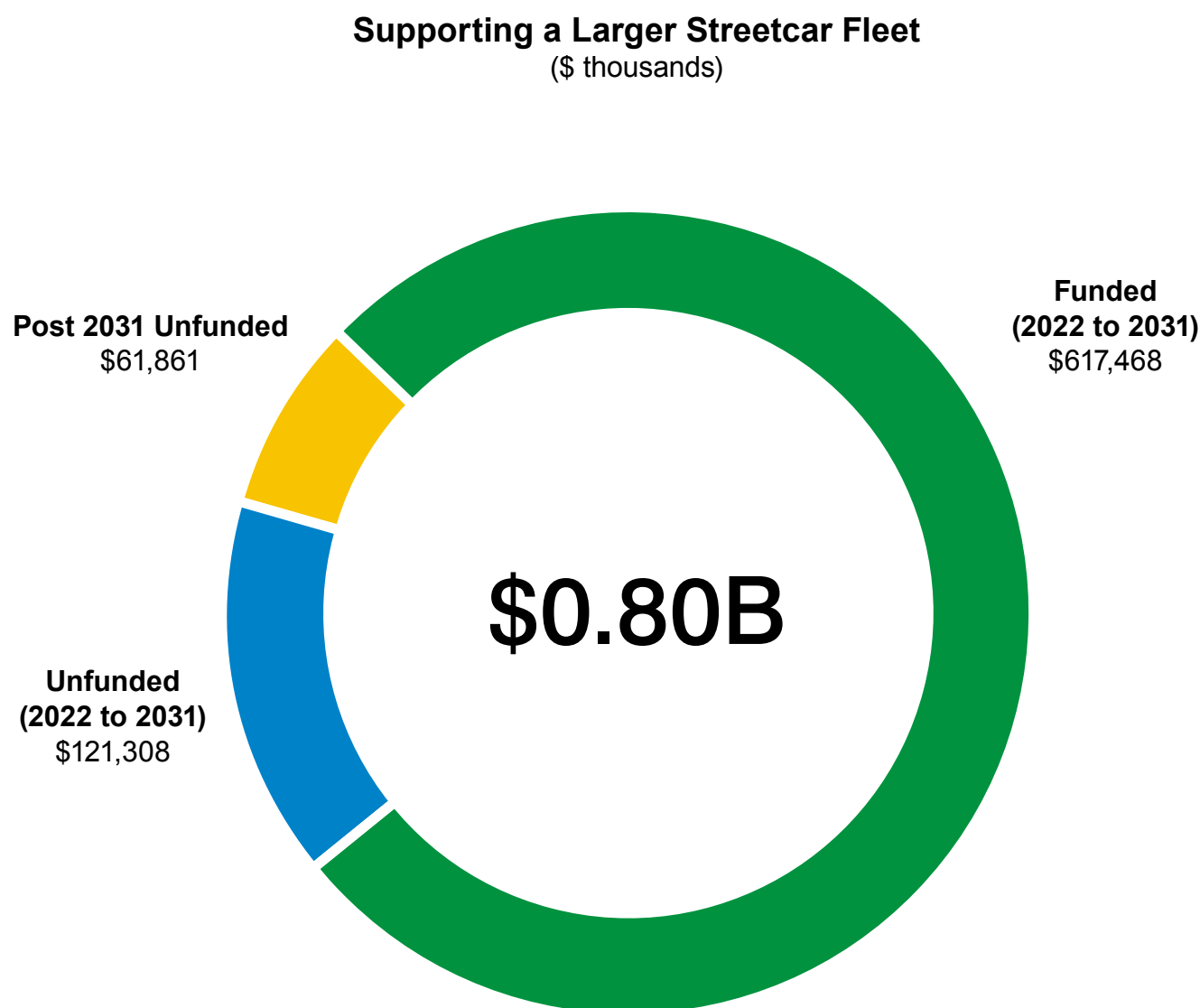
**Immediate
Funding Required
\$356M**

**Fund by
2023**

**Deliver by
2023-2031**

**Remainder Unfunded
(2032-2036)
\$14M**

Supporting a Larger Streetcar Fleet



Including the unfunded priorities on the following pages, as well as \$89M in other investments required to match streetcar service to demand.

Thanks to Provincial and Federal funding of \$180 million each to the procurement of 60 new streetcars and the associated infrastructure at Hillcrest, TTC streetcar service will meet customer demand for the first time in years, without the need for buses to service streetcar routes. Supporting this larger fleet remains a priority.

Our new and expanded fleet of longer low-floor streetcars must be supported by ongoing investments in facilities and infrastructure, including modernizing a maintenance facility to accommodate new vehicles and upgrading overhead power for increased demand.

And by consolidating more streetcar maintenance activity at Hillcrest Complex, we can also improve the efficiency of the network overall.

Progress

Completed initial order of 204 streetcars from Bombardier/Alstom

\$568 million in new funding, enough to fund 60 additional streetcars and expand storage and maintenance capacity at Hillcrest Complex

Upgraded Roncesvalles Carhouse to accommodate low-floor streetcars





We need to renew Russell Carhouse

Why?

To enable proper storage and maintenance of low-floor streetcars, including new equipment to service roof-mounted HVAC systems on streetcars.

1916
The year Russell Carhouse opened

**Immediate
Funding Required**
\$71M

Fund by
2024

Deliver by
2027

Remainder Unfunded
\$0





As we continue to upgrade overhead power...

Why?

Our new low-floor streetcars are larger and use more power than their predecessors. Without completing the conversion to pantograph technology and reconstructing the overhead network, streetcar reliability will suffer – especially in winter.

50%
Increased power required by larger streetcars

**Immediate
Funding Required**
\$19M

Fund by
2023

Deliver by
Ongoing

**Remainder Unfunded
(2032-2036)**
\$61.9M





And optimize the future use of Hillcrest Complex.

Why?

To maximize the use of our real estate, study how to best utilize the Hillcrest Complex given all of its current uses.

Current Use

Hillcrest Complex houses nine large operational facilities and office buildings, including bus and streetcar shops, training facilities, parts storage, and subway operations.

**Immediate
Funding Required**
\$3M

Fund by
2023

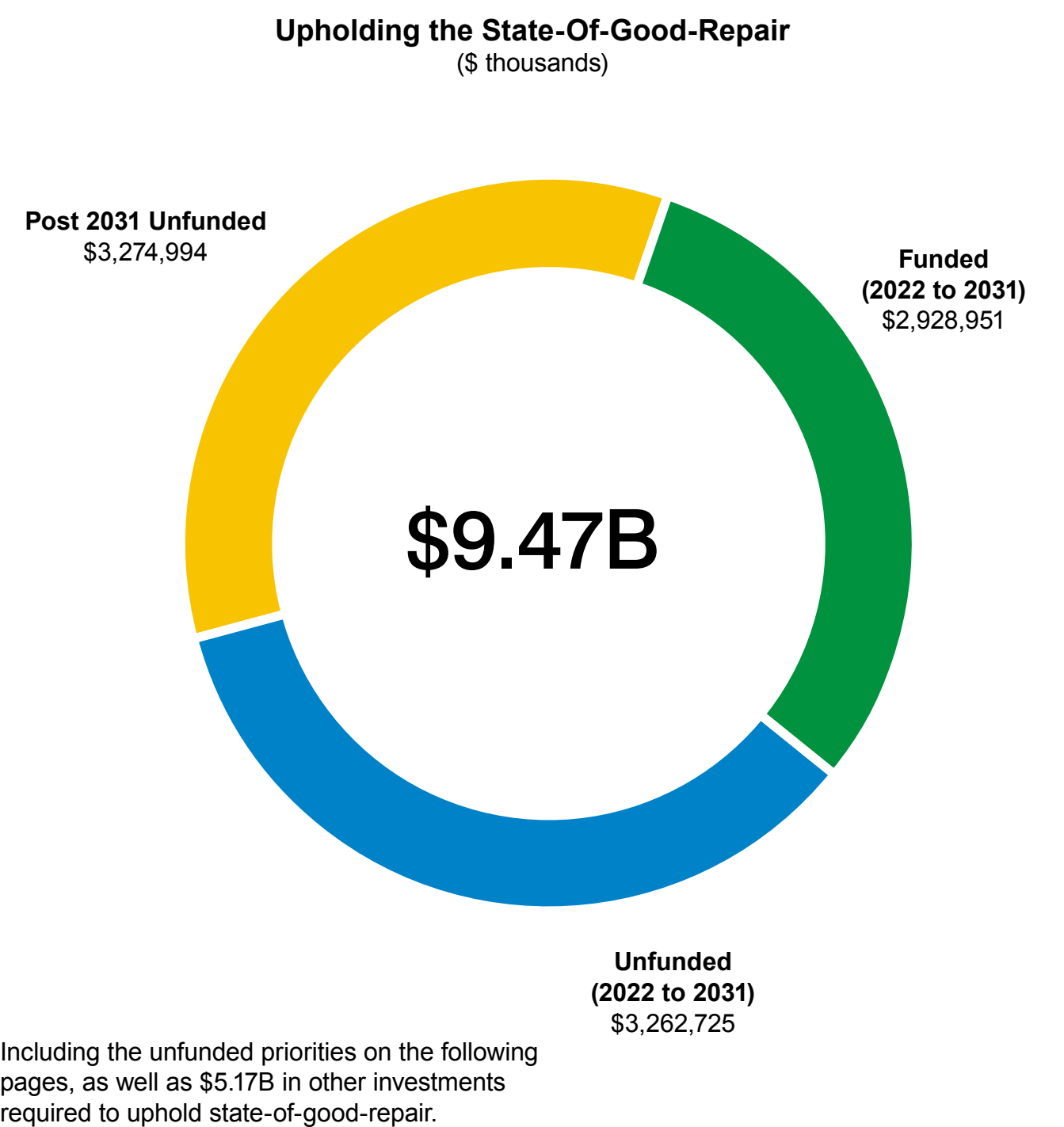
Deliver by
2025

Remainder Unfunded
TBD





Upholding the State-of-Good-Repair



While it may not be glamorous, keeping the TTC's existing asset base properly maintained is critical to keeping Toronto moving safely and reliably. Parts of our critical infrastructure, such as some electrical substations, are nearly 90 years old.

Approximately \$2 billion or 31% of our unfunded SOGR is required for preventative fleet maintenance to uphold reliability and extend a vehicle's life and \$4.5 billion is needed to fund improvements required for safety; to comply with legislation, replace critical infrastructure, and ensure ongoing building maintenance, represent 69% of our unfunded capital needs.

Failing to continue to invest will result in a state-of-good-repair backlog that grows exponentially. Without new, steady-state funding, our maintenance backlog will grow to nearly \$6 billion by 2031, approximately a third of our total asset value.

Progress

Replaced 33,500 feet of subway rail in 2020, more than 50% more than originally planned, taking advantage of lower ridership during the pandemic

Eliminated the need to have 20 to 30 future weekend subway closures and avoided two years of bypassing station platforms, by completing 44,000 square feet of asbestos abatements.

Completed 20-year scheduled maintenance program on Line 2 trains



Upholding the State-of-Good-Repair

Fleet Overhauls

Buying a new vehicle is just the start: preventative maintenance is required throughout its lifecycle to protect and get the maximum return from that investment. We had to wait for our vehicles to break down before repairing them. Shifting focus to scheduled component replacements and overhauls, we have improved reliability and on-time performance for customers. With funding soon to be exhausted, it is critical to establish steady-state, predictable funding of \$142 million annually.

Scheduled maintenance and overhaul of 145 subway cars annually

Why?
The TR trains used on Line 1 will require a mid-life overhaul starting in 2026, as well as scheduled component replacements to maintain the reliability and availability of the fleet.

Immediate Funding Required
\$579M by 2023

Scheduled maintenance on 30 streetcars annually

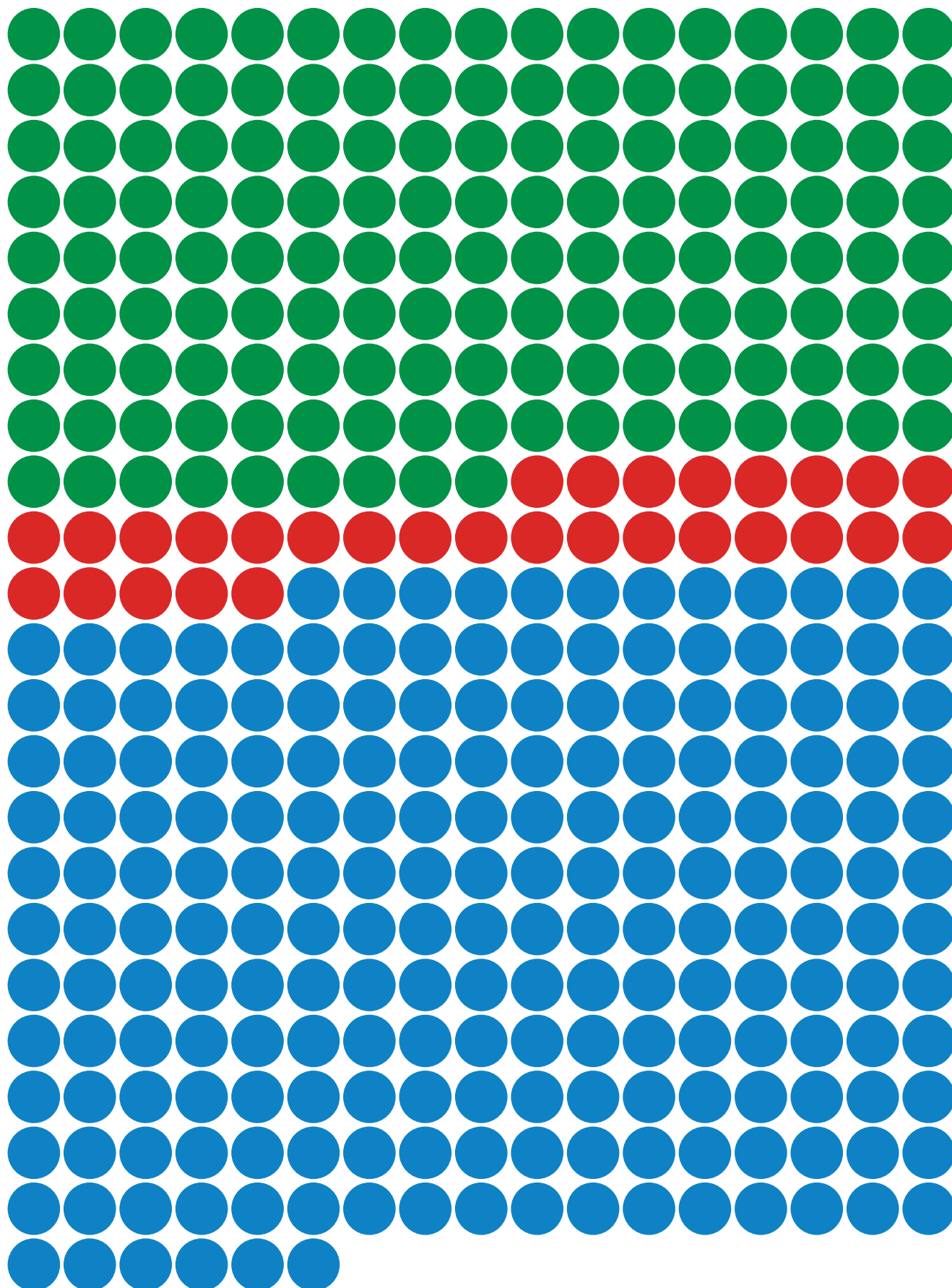
Why?
When our low-floor streetcars begin turning eight years old in 2023, they'll be ready for their first major state-of-good-repair program. Routine scheduled maintenance is critical for maintaining reliability over a streetcar's 30-year life.

Immediate Funding Required
\$148M by 2024

Overhaul up to 205 buses annually

Why?
The new buses made possible by PTIF funding from 2017-2019 will mean an increased number of vehicles requiring overhaul halfway through their 13-year lives, which is only funded through 2022.

Immediate Funding Required
\$473 by 2024



Safety and Legislated Improvements

When determining the TTC’s capital needs, projects needed to uphold our health, safety, and legislative requirements are given the highest priority. These projects ensure that we meet our legal obligations, but they also reinforce our most important responsibility of all: keeping our customers, employees, and surrounding communities safe.



Replace Greenwood Yard firemain

Why?

To uphold fire safety by replacing a 55-year-old firemain showing signs of deterioration.

Immediate Funding Required

\$10.8M By 2028



Replace old storage tanks

Why?

To minimize the risk of a hazardous chemical leak.

Immediate Funding Required

\$11.7M by 2024



Upgrade platform ventilation

Why?

To improve fire safety and meet legislative requirements at five bus platforms within subway stations.

Immediate Funding Required

\$16.1M by 2023



Upholding the State-of-Good-Repair System Maintenance

Any of the infrastructure that underpins our transit system – from thousands of kilometres of subway and streetcar tracks to the power that keeps our trains and streetcars running to the nuts and bolts of our stations – can cause significant disruption if it fails. Much of it is aging and decades-old. We need predictable, steady state funding to maintain our assets in a state-of-good-repair.





Replace streetcar track system

Why?

To ensure continued reliability, including at critical intersections.

Steady-State Funding Required

\$30M annually by 2023



Maintain escalators and elevators

Why?

To keep customers moving on Canada's largest collection of 333 escalators and 113 elevators, using a combination of mid-life overhauls and replacement at the end of their 25-year lives.

Steady-State Funding Required

\$11M annually by 2023



Replace traction power and cables

Why?

To ensure continued reliability, safety, and resiliency of both the subway and streetcar network. This means upgrading obsolete power supply and replacing subway tunnel and streetcar power cables that are up to 60 years old.

Steady-State Funding Required

\$4M annually by 2023

Operational Infrastructure

The buildings and other assets that support our system's operation also require routine maintenance to prevent costlier problems from developing in the future. Some of the TTC's 54 maintenance and storage facilities are as old as the TTC itself, which began operation in 1921.



**Maintain
facilities**

Why?

From replacing old bus hoists, to repairing roofing, to upgrading HVAC and other building systems, our facilities require ongoing upkeep.

Steady-State Funding Required

\$97M annually by 2023



**Upgrade
IT infrastructure**

Why?

As with any enterprise, our servers, data centres, and software applications are essential services that require a baseline of continuous upgrades to safeguard security, resiliency, and efficiency.

Steady-State Funding Required

\$30M annually by 2023



**Replace old
non-revenue vehicles**

Why?

To replace trucks and workcars critical to transporting materials and personnel around the system for maintenance.

Steady-State Funding Required

\$8M annually by 2023



The facility history

- 1921 Roncesvalles Carhouse
- 1921 Russell Carhouse
- 1924 Hillcrest Complex
- 1954 Davisville Carhouse
- 1955 Birchmount Garage
- 1958 McBrien Building
- 1966 Greenwood Carhouse
- 1966 Queensway Garage
- 1966 Subway and Keele Yard
- 1976 Wilson Carhouse and Garage
- 1980 Lakeshore Bus Garage
- 1983 Malvern Garage
- 1985 McCowan Carhouse, Yard and Substation
- 1988 Arrow Road Bus Garage
- 2001 Eglinton Bus Garage
- 2008 Mount Dennis Bus Garage
- 2015 Leslie Barns
- 2021 McNicoll Bus Garage

Appendix

15-Year Base Capital Investments

In many cases, capital cost estimates are preliminary order-of-magnitude projections that are intended for planning purposes only.

These estimates will inevitably be subject to change as detailed design and project maturity occurs.

Some totals may not be exact due to rounding.

Project / Program	Summary Description	Est. Cost	Funded	Unfunded
Line 1 - Subway				
Line 1 Capacity Enhancement	Increasing capacity through purchase of new trains, new northern yard and other station infrastructure enhancements	\$5.05 B	\$1.33 B	\$3.73 B
Purchase of Subway Trains- Ridership Growth	Purchase of new subway trains to meet ATC requirements and ridership growth forecasts	\$0.72 B	\$0.16 B	\$0.55 B
Subway Train Overhaul	Overhaul of the subway fleet to maintain state-of-good-repair	\$0.44 B	\$0.10 B	\$0.33 B
Traction Power	Replacement of electrical systems that power the subway, including substation electrical and cable rebuilds	\$0.15 B	\$0.06 B	\$0.08 B
Subway Infrastructure	Maintenance of bridges and tunnels, communications, signal systems	\$0.63 B	\$0.37 B	\$0.25 B
Fire Ventilation Upgrade	Increasing the capacity of the subway fire ventilation system and constructing second exits	\$0.97 B	\$0.21 B	\$0.76 B
Toronto Rocket/T1 Rail Yard Accommodation	Increasing subway train storage capacity at Wilson and Davisville Yards	\$0.07 B	\$0.07 B	\$0.00 B
Automatic Train Control (ATC) Resignalling- Line 1	Increasing capacity by reducing headway, providing more reliable service	\$0.12 B	\$0.12 B	\$0.00 B
Subway Track	Subway track and turnout rehabilitation, rail grinding, rail vehicle-based inspection system	\$0.29 B	\$0.17 B	\$0.12 B
Other Subway	Workcar purchase and overhaul, subway asbestos removal, pump and lighting replacement	\$0.20 B	\$0.19 B	\$0.01 B
Line 1 Total		\$8.64 B	\$2.79 B	\$5.84 B

Line 2 - Subway				
Line 2 Capacity Enhancement	Increasing capacity through purchase of new trains, traction power upgrades and other station infrastructure enhancements	\$3.66 B	\$0.61 B	\$3.05 B
Purchase of Subway Trains (T1 replacement)	End-of-life replacement of existing T1 subway train fleet	\$1.60 B	\$0.46 B	\$1.15 B
Subway Train Overhaul	Overhaul of the subway fleet to maintain state-of-good-repair	\$0.44 B	\$0.10 B	\$0.33 B
Traction Power	Replacement of electrical systems that power the subway, including substation electrical and cable rebuilds	\$0.15 B	\$0.06 B	\$0.08 B
Subway Infrastructure	Maintenance of bridges and tunnels, communications, signal systems	\$0.63 B	\$0.37 B	\$0.25 B
Fire Ventilation Upgrade	Increasing the capacity of the subway fire ventilation system and constructing second exits	\$0.97 B	\$0.21 B	\$0.76 B
Toronto Rocket/T1 Rail Yard Accommodation	Increasing subway train storage capacity at Greenwood, Keele Yard and Kipling trail tracks	\$0.07 B	\$0.07 B	\$0.00 B
Automatic Train Control (ATC) Resignalling- Line 2	Increasing capacity by reducing headway, providing more reliable service	\$0.81 B	\$0.72 B	\$0.09 B
Subway Track	Subway track and turnout rehabilitation, rail grinding, rail vehicle-based inspection system	\$0.29 B	\$0.17 B	\$0.12 B
Other Subway	Workcar purchase and overhaul, subway asbestos removal, pump and lighting replacement	\$0.20 B	\$0.19 B	\$0.01 B
Western Yard	Purchase of land, construction of maintenance and storage facility and connection to the main line to meet growth	\$3.81 B	\$0.20 B	\$3.62 B
Line 2 Total		\$12.63 B	\$3.17 B	\$9.46 B

Project / Program	Summary Description	Est. Cost	Funded	Unfunded
Bus				
Bus Procurement Program	Purchase of low-floor, zero emissions buses	\$3.53 B	\$0.61 B	\$2.92 B
Tenth Bus Garage	Construct a tenth garage that will allow for several years of growth	\$0.57 B	\$0.13 B	\$0.45 B
Bus Overhaul Program	Mid-life rebuild of Orion and Nova bus fleets, including engine, transmission and suspension	\$0.96 B	\$0.18 B	\$0.78 B
Bus Garages	Heavy-overhaul bus facility, equipment and garage upgrades	\$0.43 B	\$0.05 B	\$0.38 B
Bus Charging Systems	To support charging of electric buses at TTC garages, along with on-route charging	\$0.72 B	\$0.07 B	\$0.65 B
Other Bus	Transit signal priority measures, bus stop improvements, autonomous vehicle program	\$0.48 B	\$0.09 B	\$0.39 B
Bus Total		\$6.69 B	\$1.12 B	\$5.57 B

Stations				
Bloor-Yonge Capacity Improvements	Construction of additional platforms, escalators and elevators to improve vertical circulation	\$1.49 B	\$1.49 B	\$0.00 B
Station Rehabilitation	Roofing rehabilitation on subway rapid transit stations and station finish renewal	\$0.33 B	\$0.09 B	\$0.24 B
Elevator and Escalator Overhaul and Replacement	Replacement, modification and upgrades to escalators and elevators to extend their useful life	\$0.25 B	\$0.10 B	\$0.15 B
Easier Access Phase III (AODA) and Enhanced Station Access	Installing elevators to make all stations accessible by 2025 and additional future elevator installations	\$0.62 B	\$0.62 B	\$0.00 B
Platform Edge Doors	Installation of doors on subway platforms to prevent passengers accessing subway tracks	\$1.35 B	\$0.00 B	\$1.35 B
Other Stations	Station transformation, subway station fire alarms, bus platform ventilation	\$0.09 B	\$0.06 B	\$0.02 B
Stations Total		\$4.13 B	\$2.36 B	\$1.77 B

Streetcar				
Purchase of 204 Streetcars	Purchase of 204 accessible articulated low-floor streetcars	\$0.05 B	\$0.05 B	\$0.00 B
Purchase of 60 Streetcars for Ridership Growth	Purchase of 60 accessible articulated low-floor streetcars for growth	\$0.36 B	\$0.36 B	\$0.00 B
Streetcar Overhaul Program	Comprehensive overhaul program to ensure the state-of-good-repair of the new streetcar fleet	\$0.49 B	\$0.04 B	\$0.45 B
Hillcrest Facility Upgrade	Addition of tracks at Hillcrest to facilitate storage/parking of 25 low-floor streetcars, re-orientation of streetcars direction of travel around Harvey Shop and pre-servicing infrastructure.	\$0.10 B	\$0.10 B	\$0.00 B
Russell Yard & Carhouse Modifications	Carhouse extension at Russell, track replacement and interior modifications to accommodate servicing of new low-floor streetcars	\$0.13 B	\$0.06 B	\$0.07 B
Surface Track and Traction Power	Ongoing surface track replacement and traction power upgrades	\$1.07 B	\$0.52 B	\$0.55 B

Project / Program	Summary Description	Est. Cost	Funded	Unfunded
Streetcar Facility Upgrades	Enhancements to streetcar facilities	\$0.01 B	\$0.01 B	\$0.00 B
LRV Carhouse Facility Renewal Program- Includes Russell, Roncesvalles	Modification, expansion, and/or addition of streetcar maintenance and shop facilities to accommodate the future servicing of an expanding streetcar fleet	\$0.02 B	\$0.01 B	\$0.01 B
Streetcar Total		\$2.23 B	\$1.15 B	\$1.08 B

Wheel-Trans				
Purchase of Future Wheel-Trans Buses/ Transformation	Replacement of “Friendly” bus fleet and additional facilities based on the Family of Service model	\$0.33 B	\$0.04 B	\$0.29 B
Wheel-Trans Electric Charging Systems	To support charging of Wheel-Trans electric buses	\$0.04 B	\$0.00 B	\$0.04 B
Wheel-Trans Total		\$0.37 B	\$0.04 B	\$0.33 B

Other Infrastructure				
Facilities	Renewal projects for facilities, furniture, office equipment, paving and new industrial space	\$0.63 B	\$0.28 B	\$0.36 B
Information Systems	New Transit Control and ITS Centre, implementation of SAP, VISION, Enterprise Asset Management	\$0.89 B	\$0.62 B	\$0.28 B
Purchase of Automotive Non-Revenue Vehicles	Purchase of vehicles used by TTC staff for transit enforcement, plant maintenance, etc.	\$0.19 B	\$0.04 B	\$0.15 B
Health, Safety and Security Infrastructure	Storage tank replacement, backflow preventers, standby generator procurement	\$0.11 B	\$0.07 B	\$0.03 B
Other Infrastructure	Shop equipment, culvert rehabilitation, service planning and completing the implementation of the PRESTO farecard program	\$0.72 B	\$0.42 B	\$0.30 B
Other Infrastructure Total		\$2.54 B	\$1.43 B	\$1.11 B

GRAND TOTAL		\$37.22 B	\$12.05 B	\$25.17 B
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