

TTC Green Bus Program – Procurement Authorization for New eBus and Employee Parking Lots On-Grade Pavement Rehabilitation at Mount Dennis Bus Garage

Date: April 13, 2023 To: TTC Board From: Chief Capital Officer Executive Director of Innovation and Sustainability

Summary

The purpose of this report is to seek authorization to advance the implementation of electrification infrastructure, through the reconfiguration of space at Mount Dennis Garage in support of the TTC Green Bus Program.

Emitting 230,000 metric tonnes of carbon dioxide each year, the TTC's bus fleet of approximately 2,000 conventional, accessible buses and 240 Wheel-Trans buses accounts for more than 90% of the TTC's direct GHG emissions. In December 2021, City Council adopted the TransformTO Net Zero Strategy, to reduce community-wide greenhouse gas (GHG) emissions to net zero by 2040. The TTC Board also committed to transition to a zero-emissions fleet by 2040 through investment in the Green Bus Program.

To date, the Green Bus Program has resulted in fleet-wide emissions dropping by close to 20% - to 1.33 kg of CO₂e per km from 1.65 kg of CO₂e per km – through the introduction of 255 hybrid-electric buses and 60 zero-emissions, battery-electric buses (eBuses). Over the next two years an additional 336 hybrid-electric buses will be available to serve TTC customers, and the TTC will have one of the largest low-to-zero emissions bus fleets in North America.

Overall, the TTC's bus fleet is forecasted to increase by up to 300 buses over the next 15 years. In addition, the TTC plans to begin steady-state-procurement of only eBuses to remain on track to achieve zero emissions by 2040. As part of the Green Bus Program, Mount Dennis Garage is slated to receive 35 eBuses in 2024 and 42 in 2025.

Lastly, the electrification infrastructure being installed at Mount Dennis Garage over the next two years will include provisions for approximately 300 eBuses through to 2035 when this location is expected to reach 100% electrification.

To prepare for the arrival of eBuses, the Green Bus Program consists of multiple projects, including nine bus garage electrification infrastructure projects.

There are currently three garages with electrification infrastructure to support our fleet of 60 eBuses: Mount Dennis Bus Garage, Arrow Road Bus Garage and Eglinton Bus Garage. This infrastructure was installed as part of the TTC pilot for the first 60 eBuses.

Similar to that initial pilot phase, all remaining garages will be modified through Phase 1 of the electrification program, with as many chargers as the current electrical capacity can support. The next step, Phase 2, includes building a substation at each garage to accept Toronto Hydro's increase in grid supply and enable 50% electrification of the fleet. The third and final phase adds chargers sufficient to achieve a 100% electric fleet. The first garage to enter Phase 2 is Mount Dennis Garage.

The Mount Dennis Garage Electrification Project requires repurposing existing space to allow for electrification infrastructure. Referring to Figure 1, most equipment will be located on the property's southern edge, adjacent to the industrial lands to the south and furthest away from residential properties to the north (Area #1). The buses displaced by this infrastructure will be located immediately to the north of the existing garage between the building and the existing noise barrier (Area #2). As a result, employee parking, currently located in Area #2, must be relocated to the north side of the property, which is currently underutilized and is currently a mixture of grass and gravel (Area #3).

This work achieves several objectives:

- Enables electrification of the bus fleet operating out of Mount Dennis Garage, ultimately resulting in the elimination of 9,000,000 litres of diesel and 24,000 metric tonnes of CO₂e annually starting in 2040;
- Results in a net increase in bus storage for an additional 46, 12metre (40-foot) long buses, putting into practice the Boardapproved principle that existing property assets are to be optimized before acquiring new property (Ref. the TTC's Real Estate Investment Plan);
- Defers the investment required to construct and commission the 10th garage by five years to early/mid 2040s;

Residential Properties

Industrial Land Figure 1

- 4. A net increase of 59 new trees to be planted in Area #3, resulting in 6.3 metric tonnes of additional carbon sequestration per year; and
- 5. Enables the elimination of 2,000 metric tonnes of CO₂e annually from employee travel as personal EVs are adopted.

The design builds in additional capacity to address the forecasted growth of the bus fleet and provides opportunity to improve operational efficiencies, such as reducing deadhead time requirements (buses travelling out of service from and to revenue locations) for conventional and Wheel-Trans service. For example, the TTC could relocate the 89 Weston and 989 Weston Express (which operate 18-to-22 buses in the peaks combined) from Wilson Garage to Mount Dennis Garage with potential operating cost savings between \$100,000 and \$150,000 per annum.

Mount Dennis Garage is also a prime location for streetcar shuttles given its proximity to the TTC's streetcar network.

The design is in compliance with the City of Toronto Green Standards Tier 1 guidelines that advance broader TTC and City public health and environmental objectives, including rough-ins for employee electric vehicle charging and permeable concrete that reduces stormwater runoff, improves underground water quality, mitigates the heat-island effect mitigation and minimizes traffic noise.

TTC staff are also engaging its neighbours with respect to the expansion of the vehicle storage area and the relocation of the employee parking lot. Community outreach to the local Councillor and Touchstone Drive neighbours began in December 2022. Public meetings were held on February 22 and March 27, 2023 to discuss TTC work and address their concerns.

This report requests authorization to award "Contract X1-10 for Mount Dennis Bus Garage New eBus and Employee Parking Lots – On-Grade Pavement Rehabilitation" to Maystar General Contractors Inc. in the amount of \$10,870,600.00, inclusive of all taxes, on the basis of the lowest-priced compliant bid. The scope of work in this contract includes the supply of all labour, equipment and material for the removal of existing asphalt, repaving, new concrete islands for charging equipment and traffic management, new employee parking, as well as conduit and other provisions for subsequent installation of electrification equipment in Areas #2 and #3.

Recommendations

It is recommended that the TTC Board:

1. Authorize the award of Contract X1-10 for Mount Dennis Bus Garage New eBus and Employee Parking Lots – On-Grade Pavement Rehabilitation to Maystar General Contractors Inc. in the amount of \$10,870,600.00, inclusive of all taxes based on the lowest-priced compliant bid.

Funds for this expenditure are included in the TTC's 2023-2032 Capital Budget and Plan under Program 3.3: On-Grade Paving Rehabilitation Program, which was approved by the TTC Board at its meeting on January 9, 2023 and City Council on February 15, 2023.

The 10-year Capital Plan includes a total of \$121.4 million for the On-Grade Paving Rehabilitation Program comprising of annual cashflow funding, as outlined in the table below. A budget adjustment to account for the \$1.1-million of unspent funds in 2022 being carried forward into 2024 will be included in the 2023 Capital Budget Adjustments for Incremental Carryforward Funding and Future Year commitments report that will be subject to City Council approval, bringing the approved funding in the 2023-2032 Capital Budget and Plan to \$122.5 million.

Project Name	2023 Budget	2024	2025	2026	2027	2028- 2032	10-Year Total
On-Grade Paving Rehabilitation Program	11,837	16,028	15,955	9,233	5,400	64,028	122,481

Project Name	2023 Budget	2024	2025	2026	2027	2028- 2032	10-Year Total
On-Grade Paving Rehabilitation Program	11,837	14,913	15,955	9,233	5,400	64,028	121,366
*/in thousands)	11,037	14,913	15,955	9,233	5,400	04,020	L

*(in thousands)

Based on the expected progress of work, the contract expenditures will be incurred over 2023 and 2024 and will require the following cash flow funding:

	2023 Forecast	2024 Forecast	Total Contract Amount
Construction expenditure	\$4,719,438	\$6,151,162	\$10,870,600
Rebatable HST	(\$469,438)	(\$611,850)	(\$1,081,288)
Net financial impact (net of rebatable HST)	\$4,250,000	\$5,539,312	\$9,789,312

The Chief Financial Officer has reviewed this report and agrees with the financial impact information.

As a proud leader in providing accessible public transit in the city of Toronto, the TTC is committed to ensuring reliable, safe, accessible and inclusive transit services for all our customers. TTC staff has reviewed the work of this contract and assessed that this contract does not reduce accessibility or create barriers for the employees/users of Mount Dennis Division/Garage. The number of wheelchair-accessible parking stalls will increase to 12 from three to comply with the latest TTC Design Manual requirements. Proceeding with this modification will allow the TTC to optimize the use of TTC property and support anticipated bus fleet growth. This would provide capacity to increase service provided on some of the busiest bus corridors in the city that are based out of Mount Dennis Division/Garage, including Jane Street, Dufferin Street and Keele Street.

Decision History

At the June 12, 2018 TTC Board meeting, TTC staff presented an update report on the Green Bus Technology Plan, which was originally approved by the Board at its November 2017 meeting. The Board delegated the authority to the CEO to procure an additional 30 long-range eBuses, for a total of 60, and directed the TTC to work with Toronto Hydro to begin preparations for the electrification of the TTC's first all-electric bus garage to support future procurements of eBuses for a total cost of \$90 million.

November 13, 2017 Report: Green Bus Technology Plan

Presentation: 2018-2040 Green Bus Technology Plan

Decision: Green Bus Technology Plan

June 12, 2018 Board Report: Green Bus Technology Plan Update (Presentation)

Decision: Green Bus Technology Plan Update

At its October 22, 2020 meeting, the TTC Board received the TTC's Fleet Procurement Strategy and Plan. The Board directed the TTC to continue to work with Toronto Hydro and Ontario Power Generation (OPG), and report back to the Board with draft agreement(s) for the delivery of the required bus, Wheel-Trans and non-revenue vehicle charging infrastructure to enable the achievement of the TTC's target for a fossil-fuelfree/zero-emissions fleet by 2040.

October 22, 2020 Board Report: TTC Fleet Procurement Strategy and Plan

Presentation: TTC Fleet Procurement Strategy and Plan 2020-2034

Decision: TTC Fleet Procurement Strategy and Plan

At the April 14, 2021 TTC Board meeting, TTC staff presented the Framework for Agreement between the TTC, Toronto Hydro and OPG, where Toronto Hydro is responsible for upgrading the electrical feeders supply to TTC properties and OPG co-TTC Green Bus Program – Procurement Authorization for New eBus and Employee Page 5 of 17 Parking Lots – On-grade Pavement Rehabilitation at Mount Dennis Bus Garage invests, designs, builds, owns, operates and maintains the electrification infrastructure on TTC properties.

April 14, 2021 Board Report: <u>TTC's Green Bus Program: TTC-OPG-THESL Framework</u> for Agreement on Electrification Infrastructure

Presentation: TTC Green Bus Program TTC-OPG-THESL Framework for Agreement

Decision: <u>TTC's Green Bus Program: TTC-OPG-THESL Framework for Agreement on</u> <u>Electrification Infrastructure</u>

Issue Background

Emitting the equivalent of 230,000 metric tonnes of carbon dioxide each year, the TTC's bus fleet of approximately 2,000 conventional, accessible buses and 240 Wheel-Trans buses accounts for more than 90% of the TTC's direct GHG emissions. In December 2021, City Council adopted the TransformTO Net Zero Strategy, to reduce community-wide greenhouse gas (GHG) emissions to net zero by 2040. This commitment aligned with the November 2017 Board approval of the TTC Green Bus Program, to transition away from fossil-fuel fleet to a zero-emissions fleet by 2040.

As part of the work under this program, the TTC has undertaken the necessary steps to help support immediate service growth ahead of the construction of a 10th bus garage.

Contract X1-10 (detailed in Phase 1 below) was initiated as part of the program, which is comprised of the ongoing assessment, design and rehabilitation of the TTC's facilities. As part of the review of existing garages, a need for electrification and expansion to accommodate existing and future operational growth within the TTC was identified.

In keeping with the TTC Green Bus program, committing to transition away from fossil fuel to a zero-emissions fleet by 2040, and the TTC's Real Estate Investment principle to maximize existing real estate prior to acquiring new property, the review determined that Mount Dennis Garage is considered a prime candidate for electrification and fleet expansion because the site will have the capacity to accommodate both fleet and service growth requirements.

Mount Dennis Bus Garage is located at 121 Industry St., northwest of the intersection of Industry Street and Ray Avenue. The garage opened on November 23, 2008, and it presently serves 29 bus routes with a fleet of 266 buses.

The proposed work at Mount Dennis Garage is broken down into three phases (see attached program in Appendix C):

1) **Phase 1** is the requirement to reconfigure/expand outdoor storage space to meet future needs and service requirements. The existing employee parking lot (Area 2 shown in Figure 1) will be reconfigured to store 87 40-foot buses and the enabling works for Phase 2. The current vacant Area 3 (shown in Figure 1) to the north will

also be redeveloped to house employee parking for up to 325 vehicles (increase of 47) to accommodate the increase in the capacity of the garage.

- 2) Phase 2 of the project will install approximately 40-to-50 additional charge points to enable up to 50% eBus fleet operations. As part of Phase 2, a new high-voltage distribution network will be created to allow up to 100% eBus charging. Emergency back-up generators will be added for continuity of operations and resiliency.
- 3) **Phase 3** is the addition of chargers for 100% fleet operation with the installation of additional battery energy storage systems and/or generators, as needed.

As part of Phase 1 scope, the number of wheelchair-accessible parking stalls within the relocated employee parking lot will increase to 12 from three to comply with the latest TTC Design Manual requirements. The parking lot scope also includes providing space to accommodate vehicle electrification infrastructure (electrical conduits rough-ins for 30 future charge points), permeable surfaces to reduce runoff, preserving 99 existing trees, removal of 46 trees/bushes, of which four trees will require a permit, and the planting of 63 new trees to maximize landscape areas in remaining green spaces (approximately 25%) within the reallocated parking lot. The design is in compliance with the City of Toronto Green Standards Tier 1 guidelines.

The work has been staged to mitigate operational disruptions to Mount Dennis Bus Division/Garage operations based on input from various stakeholder groups within the TTC.

TTC staff are also engaging the community with respect to the expansion of the vehicle storage area and relocation and expansion of the employee parking lot to meet service growth. Employee parking is required for our operators and maintenance staff. As employees live throughout the Greater Toronto Area, options to take overnight transit between is limited. The table below highlights the number of employees who currently park at the Mount Dennis Garage through various shift patterns.

Operators Shift Timing	Average number of vehicles in lot during shift on weekdays
11:30 pm – 3:30am	30 - 210
3:30am – 6:00pm	210 - 260
6:00pm – 11:30pm	40 - 60

Community outreach to the local Councillor and Touchstone Drive neighbours began in December 2022. Public meetings were held on February 22 and March 27, 2023.

At the first meeting, residents asked TTC staff for more information on the parking lot design, lighting, shared boundary trees, fencing, construction hours and security. A follow-up meeting was held with the community on March 27 to discuss TTC work to

address the remaining questions. The TTC has committed to keep the parking lot well-lit for security and to angle the lighting away from homes for privacy. The TTC will keep the existing noise wall in place between buses and the neighbours to mitigate noise. The new lot is designed to preclude storage of buses, which will continue to be stored behind the noise wall. Work hours for construction are planned from 7 a.m. to 7 p.m. with any overnight work occurring only if required and after consultation. As part of the community engagement strategy, a dedicated community liaison staff person will continue to co-ordinate communication between neighbours and the project team throughout the construction of the project. Updates will continue to be provided and posted to the project website: <u>https://pw.ttc.ca/about-the-ttc/projects-and-plans/Mount-Dennis</u>.

Comments

The Bid documents were prepared for Contract X1-10 (Phase 1 scope) and a Request For Bids (RFB) was posted on the Merx website as of November 11, 2022. A total of 14 companies downloaded copies of the bid documents and nine attended the site tour.

Six of the nine companies that attended the site tour submitted a bid by the closing date of Friday, January 6, 2023 and are summarized on the attached Appendix A.

The RFB specified that the Bidder must possess a valid Certificate of Recognition (COR[™]), with Infrastructure Health and Safety Association (IHSA), at the time of the closing and for the duration of the term of the contract.

Maystar General Contractors Inc. submitted the lowest-priced bid and did not state any exceptions or qualifications. Maystar General Contractors Inc. is COR-certified as specified in the bid documents. Although Maystar has previously worked for the TTC, reference checks were completed, which confirmed that Maystar has satisfactorily performed work of similar size, scope, complexity, and technical specialty in the past. Their bid is considered commercially acceptable.

The Agreement to Bond submitted by Maystar General Contractors Inc., covers a Performance Bond, along with the Labour and Material Payment Bond, and was submitted by Zurich Insurance Company Ltd., who have been verified as a Surety Company licensed to transact business under the Insurance Act of Ontario. As such, they are considered financially capable of performing the work.

The successful Bidder will be required to execute a Performance Bond, Labour and Material Payment Bond, each in the amount of 50% of the contract value.

Contact

John Dimovski, Chief Project Manager 416-590-6533 john.dimovski@ttc.ca Gary Downie Chief Capital Officer

Bem Case Executive Director of Innovation and Sustainability

Attachments

Appendix A – Summary of Bids Appendix B – Site Plan and Renderings Appendix C – Mount Dennis Electrification Program

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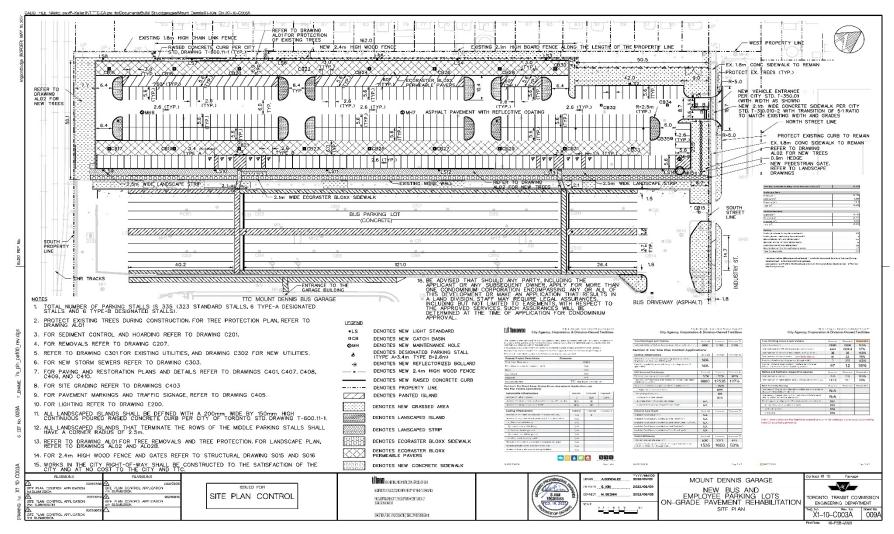
TTC Green Bus Program – Procurement Authorization for New eBus and Employee Parking Lots – On-grade Pavement Rehabilitation at Mount Dennis Bus Garage

Bid No.	Bidder	Total Bid price
1	Maystar General Contractors Inc. *	\$10,870,600.00
2	Brennan Paving & Construction Ltd.	\$12,125,837.17
3	Duron Ontario Ltd.	\$12,473,346.80
4	Aqua Tech Solutions Inc.	\$13,477,586.95
5	Sanscon Construction Ltd.	\$14,898,948.18
6	Dufferin Construction Company	\$15,966,672.87

Summary of Bids

* Recommended for award

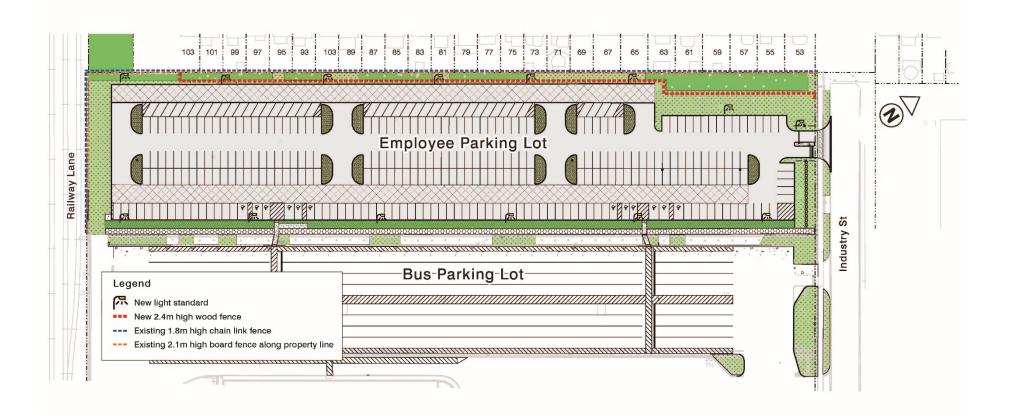
TTC Green Bus Program – Procurement Authorization for New eBus and Employee Parking Lots – On-grade Pavement Rehabilitation at Mount Dennis Bus Garage



SITE PLAN

Drawing showing all three elements a) current storage area where new electrical charging plant will be installed, b) new ebus storage area and c) new employee parking lot.





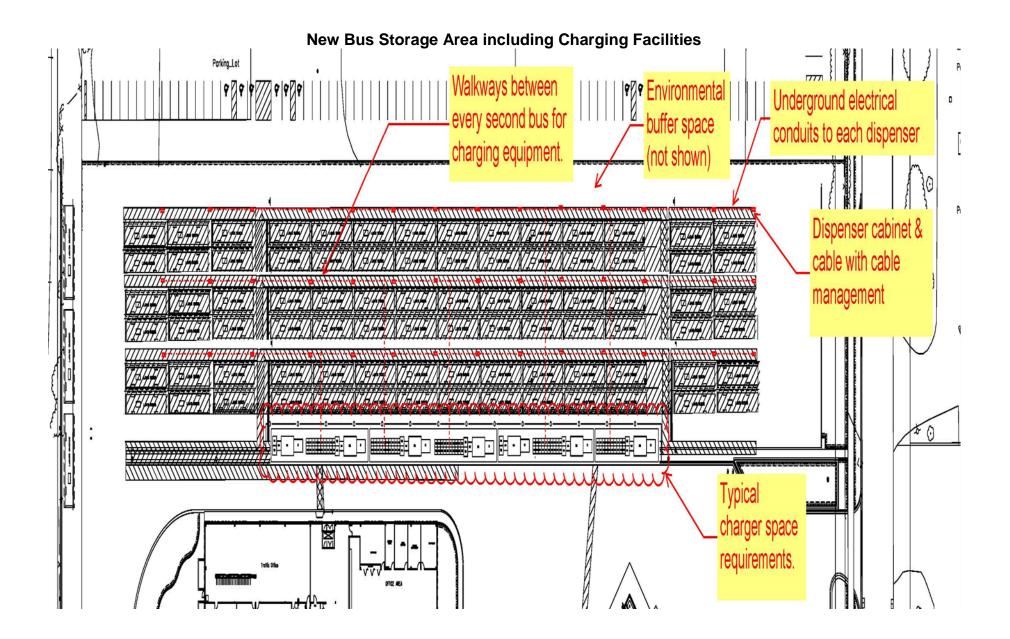




Photo of eBus charging stations (power and controls) at Mount Dennis Garage

Photo of eBus charging stations (power and controls) at Mount Dennis Garage

Future Employee Parking Lot Renderings



Rendering of new Mount Dennis Garage parking lot with security gate driveway entry. Looking west towards Touchstone Drive.



Rendering of new Mount Dennis Garage parking lot with wooden fence barrier between the lot and homes. Looking west towards Touchstone Drive.

APPENDIX C

Mount Dennis Electrification Program

		202	23			20	24			202	25			20	26			20	27			20)28			2	029			20	30			203	31			20	32			20	033	
Mount Dennis Projects	Q1	Q2 Q	3	Q4	Q1	Q2	Q3 (24 (21 (Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Mt. Dennis Storage and Employee Parking Lot																																												
Construction Works																																												
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