

Subject: Financial Update for Zero-Emission Bus Program Funding

File Number: ACS2023-FSD-FIN-0001

Report to Council 25 January 2023

Submitted on January 20, 2023 by Cyril Rogers, Chief Financial Officer (A), Finance Services Department and Renée Amilcar, General Manager, Transit Services Department

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Ward: Citywide

Objet : Mise à jour financière pour le financement du Programme des autobus non polluants

Dossier : ACS2023-FSD-FIN-0001

Rapport au Conseil le 25 janvier 2023

Soumis le 20 janvier 2023 par Cyril Rogers, Chef des Finances (T), Direction générale des services des finances et Renée Amilcar, Directrice générale, Services de transport en commun

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Quartier : À l'échelle de la ville

REPORT RECOMMENDATION(S)

That Council approve:

1. Additional budget authority for the Zero-Emission Bus (ZEB) Program in the amount of \$425 million; \$350 million from the Infrastructure Canada (INFC) grant and \$75 million drawdown on the Canada Infrastructure Bank (CIB) credit facility.

2. The budget adjustment of \$55,015,000 transferring funding from the existing 2022 approved Bus Replacement budget to the ZEB Program Budget.
3. That the General Manager, Transit Services, as part of the annual budget process, request the City's share of the ZEB funding requirements and accompanying CIB financing amount for each subsequent tranche of the ZEB purchases required from 2024 to 2025.
4. That the Chief Financial Officer/Treasurer be authorized to establish a ZEB Program Reserve, as described in this report, to facilitate the repayment of the CIB loan and replacement batteries from accrued savings, as required by the CIB loan agreement.

RECOMMANDATION(S) DU RAPPORT

Que le Conseil approuve:

1. Une autorisation budgétaire supplémentaire de 425 M\$ pour le Programme des autobus non polluants; dont 350 M\$ pour la subvention d'Infrastructure Canada (INFC) et un prélèvement de 75 M\$ à même la marge de crédit de la Banque de l'infrastructure du Canada (BIC).
2. Le transfert des fonds de l'autorisation budgétaire supplémentaire de 55 015 000 \$ préalablement approuvé pour le budget de remplacement des autobus de 2022 au Programme des autobus non polluants.
3. Que la directrice générale des Services de transport en commun demande, dans le cadre du processus budgétaire annuel, la part des besoins en financement des autobus non polluants de la Ville et le montant de financement connexe de la BIC pour chaque tranche subséquente des achats d'autobus non polluants qui devront être effectués de 2024 à 2025.
4. Que le chef des finances/trésorier soit autorisé à créer une réserve pour le Programme des autobus non polluants, comme décrit dans le présent rapport, pour faciliter le remboursement du prêt de la BIC et des batteries de remplacement à partir des économies courues, comme l'exige la convention de prêt conclue avec la BIC.

EXECUTIVE SUMMARY

On June 23, 2021, Council directed staff to purchase ZEBs for all future transit bus fleet needs, on the basis that buses are available to meet the City's operational needs and

subject to financial arrangements with CIB and INFC on terms and conditions acceptable to the City so that the purchase, transition, operation, and support is affordable under the City's Long Range Financial Plan (LRFP) for Transit.

An application was submitted to INFC for funding from the Zero-Emission Transit Fund (ZETF) on April 26, 2021, and was approved December 16, 2022 for \$350 million.

On June 28, 2022, the City's Debenture Committee authorized the Chief Financial Officer/Treasurer to enter into a conditional loan agreement with CIB in the amount of up to \$380,000,000. The loan agreement was negotiated and executed on August 10, 2022.

The purpose of this report is to provide an update on the funding model and business case for the ZEB Program and obtain budget authority for the planning, design, and construction of the charging infrastructure, including transition costs to support 350 ZEBs and to purchase the first two tranches of ZEBs. The first two tranches of bus purchases will be for 40-foot buses: 26 in 2023 and 77 in 2024.

The business case for implementing the ZEB program needs to consider the overall costs of diesel buses versus ZEBs for both capital and operating, to ensure that the net financial impact is positive to the City. A comprehensive cost benefit analysis was developed, with input and advice from external experts on cost estimates, projections and analytics for the ZEBs in comparison to diesel buses, to determine if the ZEB program is projected to be cost neutral to the City.

To determine cost neutrality the following funding sources were identified:

- City of Ottawa capital budget envelope of \$348.1 million from 2022 to 2025 for the purchase of replacement diesel buses available to put towards the 350 electric buses, per the Transit LRFP;
- Expected savings of \$397 million from energy/fuel and maintenance costs net of battery replacements over the life of the ZEBs (15 years); and,
- INFC funding of \$350 million from the ZETF.

The total estimated cost of the ZEB program for 350 buses is \$974 million. This will be funded with a \$289 million CIB loan, \$350 million ZETF funding and \$335 million in City funding, which is less than what is planned per the Transit LRFP envelope of \$348.1 million.

Of the total estimated cost of \$974 million, \$503.3 million is required for the 2023 ZEB Program to implement the charging infrastructure to support 350 ZEB's, transition costs and the first two tranches of ZEBs: \$75 million CIB loan, \$350 million ZETF funding and \$78.3 million City funding. The City's portion of the budget will be requested as part of the annual budget process for bus replacements and this report seeks approval for the additional budget authority required for the external sources of funding from INFC and CIB of \$425 million. Only \$75 million of the \$380 million CIB credit facility is required for the first 103 buses. The remaining City funding of \$256.7 million, for a total of \$335 million and the remaining CIB loan funding required for future tranches will be approved as part of the annual budget process.

The CIB loan agreement requires payment of accrued savings on a quarterly basis, in order to pay back the loan with interest. If these savings are not achieved, the payment is deferred with interest until sufficient savings accrue. Savings could accrue in one year but not in another year, depending on multiple operating and economic factors. Staff recommend that a ZEB Program Reserve account be established to accrue and put aside all savings related to the ZEB program and that this reserve be used to repay the loan and replacement batteries, or to fund other unexpected expenditures related to this program until the CIB loan is repaid and financial/operating predictability is achieved.

RÉSUMÉ

Le 23 juin 2021, le Conseil a autorisé l'achat d'autobus à émission zéro pour tous les besoins futurs du parc de véhicules de transport en commun, au motif que ces autobus répondent aux besoins opérationnels de la Ville et sous réserve d'ententes financières avec la Banque de l'infrastructure du Canada (BIC) et Infrastructure Canada (INFC), selon des modalités acceptables pour la Ville de façon que l'achat, la transition, la mise en service et le soutien soient abordables dans le cadre du plan financier à long terme (PFLT) du transport en commun de la Ville.

Une demande de financement a été soumise au Fonds pour le transport en commun à zéro émission (FTCZE) d'INFC le 26 avril 2021 et a été approuvée le 16 décembre 2022 (pour 350 millions de dollars).

Le 28 juin 2022, le Comité sur les débetures de la Ville a autorisé le chef des finances et trésorier à conclure avec la BIC une convention de prêt conditionnelle d'une valeur maximale de 380 millions de dollars. Cette convention de prêt a été négociée et exécutée le 10 août 2022.

L'objectif de ce rapport est de faire le point sur le modèle de financement et l'analyse de

rentabilité du Programme d'autobus non polluants et d'obtenir une autorisation budgétaire pour la planification, la conception et la construction des infrastructures de recharge, y compris les coûts de transition associés à l'utilisation de 350 autobus à émission zéro et aux deux premières tranches d'achat d'autobus. La Ville fera cette transaction en deux temps : 26 autobus de 40 pieds en 2023 et 77 du même type en 2024.

L'analyse de rentabilité pour la mise en œuvre du programme doit comparer les coûts généraux d'immobilisation et d'exploitation des autobus au diesel avec ceux des autobus à émission zéro pour s'assurer que les retombées financières nettes sont positives pour la Ville. Une analyse coûts-avantages complète a été effectuée en collaboration avec des experts externes quant à l'estimation des coûts, aux projections et aux données analytiques pour les autobus au diesel comparativement aux autobus à émission zéro, pour vérifier si le programme engendre des coûts supplémentaires pour la Ville.

Les sources de financement suivantes ont été prises en compte pour ce faire :

- Le budget de 348,1 millions de dollars prévu par la Ville d'Ottawa pour 2022-2025 pour l'achat d'autobus au diesel de remplacement est transférable aux 350 autobus électriques, conformément au Plan financier à long terme du transport en commun;
- On prévoit des économies de 397 millions de dollars en coûts d'énergie, de carburant et d'entretien, dont on a déduit le coût de remplacement des batteries pour toute la durée de vie des autobus à émission zéro (15 ans);
- INFC allouera 350 millions de dollars par le biais du FTCZE.

Le coût total estimé du programme d'autobus non polluants pour 350 véhicules est de 974 millions de dollars. Le financement prévu proviendra de la BIC pour 289 millions de dollars, du FTCZE pour 350 millions de dollars et de la Ville pour 335 millions de dollars, ce qui est inférieur aux 348,1 millions prévus dans le Plan financier à long terme du transport en commun.

Sur le coût total estimé de 974 millions de dollars, 503,3 millions serviront en 2023 à financer l'implémentation des infrastructures de recharge d'une capacité de 350 autobus, les coûts de transition et les deux premières tranches d'achat de véhicules : 75 millions de dollars proviendront d'un prêt de la BIC, 350 millions de dollars du FTCZE, et 78,3 millions de dollars de la Ville. La portion municipale du

budget sera demandée dans le cadre du processus budgétaire annuel de remplacement des autobus, et ce rapport demande l'approbation d'une autorisation budgétaire supplémentaire, nécessaire pour les sources de financement externes d'INFC et de la BIC (425 millions de dollars). Seulement 75 millions de dollars sur les 380 millions prêtés par la BIC sont nécessaires pour les 103 premiers autobus. La portion résiduelle du financement de la Ville de 256.7 millions pour un total de 335 millions ainsi que la balance du prêt de la BIC requis pour les achats futurs de véhicules seront approuvés dans le cadre du processus budgétaire annuel.

La convention de prêt de la BIC exige le paiement trimestriel des économies courues afin de rembourser le prêt avec intérêts. Si ces économies ne sont pas réalisées, le paiement et les intérêts seront différés jusqu'à l'accumulation suffisante d'économies. À cause de nombreux facteurs opérationnels et économiques, il se peut qu'on réalise des économies une année, mais pas la suivante. Le personnel recommande d'ouvrir un compte de réserve pour le programme d'autobus non polluants afin d'accumuler et de mettre de côté les économies liées au programme, et de s'en servir pour rembourser le prêt et acheter des batteries de remplacement, ou pour financer toute autre dépense imprévue liée au programme jusqu'à ce que le prêt de la BIC soit remboursé et que la prévisibilité financière et opérationnelle soit atteinte.

BACKGROUND

On June 12, 2019, Council directed staff to:

- Introduce electric buses to the OC Transpo fleet within the term of Council,
- Continue to monitor research conducted by various agencies such as the Canadian Urban Transit Research and Innovation Consortium (CUTRIC) and ongoing alternative energy pilot projects in other Canadian municipalities,
- Start working on a plan in the term of Council to further expand the number of buses that rely on cleaner sources of energy by 2025; and,
- Pursue funding opportunities dedicated to transit and environmental initiatives that may arise at other levels of government to help fund this transition to cleaner sources of energy.

Council approved the Climate Change Master Plan ([ACS2019-PIE-EDP-0053](#)) on January 29, 2020, as the City's overarching framework to reduce greenhouse gas (GHG) emissions and respond to the current and future effects of climate change. The

Climate Change Master Plan identifies short, medium, and long-term GHG reduction targets based on 2012 levels: a 30 per cent reduction by 2025, a 50 per cent reduction by 2030 and a 100 per cent reduction by 2040.

The Transit Services 2020 Business Plan approved by the Transit Commission on February 19, 2020, identifies the Alternative Fuels Program for the OC Transpo fleet as one of the 12 priority projects for 2020.

In 2020, the City purchased four 40-foot battery-electric buses for delivery and entry into service in 2022.

On June 23, 2021, Council directed staff to purchase zero-emission buses for all future transit bus fleet needs, on the basis that buses are available to meet the City's operational needs and subject to financial arrangements with CIB and INFC on terms and conditions acceptable to the City so that the purchase, transition, operation, and support is affordable under the City's LRFP for Transit. The General Manager, Transit Services, was delegated the authority, with the concurrence of the City Treasurer, to negotiate and enter into an acceptable long-term financing arrangement with the CIB, and a funding agreement for 35 to 50 per cent of implementation costs with INFC.

City staff have been working with external experts to further refine the cost estimates for the ZEB program, the details of which were required for an application submitted to INFC for funding from the ZETF. The application was submitted on April 26, 2021, and was approved December 16, 2022, for \$350 million.

On June 28, 2022, the Debenture Committee authorized the Chief Financial Officer/Treasurer to enter into a conditional loan agreement with CIB in the amount of up to \$380,000,000. The loan agreement was negotiated and executed on August 10, 2022.

The purpose of this report is to provide an update on the funding model and business case for the ZEB Program and obtain budget authority for the planning, design, and construction of the charging infrastructure, including transition costs to support 350 ZEBs and to purchase the first two tranches of ZEBs. The initial business case presented to Transit Commission and Council assumed 450 ZEBs which was dependent on preliminary estimates of cost and a certain level of financing from CIB and INFC. Since then, the timeframe has been shortened to align with the eligibility period of the ZETF funding to the end of March 2026 and the amount of funding secured, reducing the number of ZEBs and supporting charging infrastructure that is affordable to 350 ZEBs. The first two tranches of bus purchases will be for 40-foot

buses: 26 in 2023 and 77 in 2024. Following procurement, manufacturing, testing, and commissioning, buses are expected to be in service the year after the capital budget in which they are approved. Hence, the request for budget authority for the first two tranches of buses, to be in service by 2024.

DISCUSSION

As explained in the Zero-Emission Buses for OC Transpo report ([ACS2021-TSD-TS-0009](#)) report, converting the bus fleet to zero-emission comes with a significant cost for the buses, infrastructure upgrades, electrical charging equipment and transition requirements to support them. The cost to convert to a zero-emission bus fleet as well as the infrastructure was not included in the City's last Transit LRFP for transit and is not affordable without new funding from senior orders of government. The federal government announced two funding programs to support the transition to zero-emission bus fleets, a loan program through the CIB and INFC grant funding through the ZETF.

The objective of the \$2.75 billion ZETF is to advance the Government of Canada's commitment to help procure 5,000 zero emission public transit and school buses, in close partnership with the CIB. This funding will help communities to electrify their school and transit bus fleets, while reducing emissions and operational costs over the long-term. These investments are closely coordinated with the CIB's commitment to invest \$1.5 billion in ZEBs as part of its three-year Growth Plan.

Canada Infrastructure Bank Credit Facility

On June 28, 2022, the Debenture Committee authorized the Chief Financial Officer/Treasurer to enter into a conditional loan agreement with CIB in the amount of up to \$380,000,000. The loan agreement was negotiated and executed on August 10, 2022. The loan advances will be available to the City under the credit facility in a form of multiple drawdowns until December 31, 2027, and will be used to cover the difference between the cost of a diesel bus and the cost of a ZEB. The City would be paying what it normally would if diesel buses were purchased. The loan will be paid back from the energy and maintenance cost savings that are expected with ZEBs at one per cent interest over the 15-year expected lifespan of the buses, with repayments being the lesser of the loan or the savings achieved.

The credit facility was sized to purchase 446 ZEBs from 2022-2027. Drawdowns on the credit facility will be aligned with budget approvals that would be provided by Council each year as part of the budget approval process. The two tranches of ZEB purchases will include 26 buses in 2023 and 77 buses in 2024, with the City's share of the cost to

be funded by the existing budget authority received by Council in the 2022 for bus replacements (IO#910626) of \$55 million and \$23.3 million that will be requested as part of the 2023 bus replacement budget. The CIB credit facility will cover the difference between the City's share for a GHG bus and the cost of a ZEB.

The sizing of the CIB credit facility is based on estimated savings from energy and maintenance costs which were developed by external experts with input from City staff with knowledge of current operating costs and then validated by CIB and their external advisors. The agreed to baseline metrics for GHG and ZEB energy and maintenance costs and other operating metrics impacting savings were negotiated to arrive at a financial model for repayment where risks are balanced between CIB and the City. Repayment is the lower of a) 80 per cent of estimated savings and b) actual savings; with the City retaining 20 per cent of the savings, if achieved. The City takes on the risk of achieving sufficient mileage each year with the ZEBs and must also absorb any increase in the price of electricity above what has been estimated, although this risk is tempered by the risk of increasing diesel fuel prices if the City did not convert to electric. CIB takes on the risk of the useful life, maintenance costs, energy efficiency and replacement frequency as well as the cost of batteries for the ZEBs.

If the actual savings are not sufficient to fully repay the credit facility with interest, and Transit Services has done what is practical to minimize costs and maximize vehicle reliability, then the City is only required to pay back what has actually been saved. The shortfall will be absorbed by CIB. If the City saves more over the term of the credit facility and fully repays the principal and interest, any excess savings will remain with the City. Interest is charged on any deferred payments that were not repaid in the periods where savings are not achieved and does not need to be repaid unless and until sufficient savings are accrued.

The CIB Board of Directors approved the financing arrangement with the City for up to \$380 million, which is estimated to cover the higher purchase price of up to 446 ZEBs. The City will only draw down based on needs and affordability. The CIB loan is based on how much the CIB estimates the City can save which is equivalent to the estimated cost difference between a GHG bus and ZEB bus. If prices for ZEBs increase beyond that estimate there is also the possibility of applying INFC funding from the ZETF to pay for a portion of the buses. ZETF funding is also required to pay for the charging infrastructure and transition costs. Therefore, this program is limited by the ZETF funding available and the funding the City has available per the Transit LRFP. The next two sections will describe both sources of funds in greater detail.

Infrastructure Canada – Zero Emission Transit Fund (ZETF)

On April 26, 2022, the City submitted an application to INFC for funding from the ZETF. There were two streams of funding: one for Planning Projects and another for Capital Projects. The City of Ottawa was approved for Accelerator Fund funding of up to \$2 million from CIB to complete much of the planning work and therefore, the application submitted to INFC was for the Capital Projects stream. Only \$1.69 million of the accelerator funding was used and it is now included as part of the \$380 million loan that will be repaid from savings. This funding was helpful in advancing the City's designs and plans for the first tranche of 26 ZEBs and to sufficiently develop the detailed planning information INFC was seeking from applicants for the second stream of funding.

Applications for the Capital Projects stream had to include supporting documentation (studies, analysis etc.) for all assertions and any information deemed necessary by Infrastructure Canada to assess the eligibility and merit of projects. Projects that did not meet all of the mandatory merit criteria (system-level planning, operational planning and deployment strategy) would not be given further consideration. Additional merit criteria (financial planning and capacity to implement the technology) and supplemental information about a project (environmental benefits, project risk, accessibility, and community considerations) were also considered in INFC's assessment.

INFC requested, and the City provided, the following information in its ZETF application:

- **System-level Planning:** detailed description of the project objectives and technology choices which define the project, a description of the planned refueling/charging infrastructure, facility needs, and utility upgrades required to ensure that critical operations will be supported.
- **Operational Planning:** information (analysis, route modeling, etc.) which support decisions and design choices such as the route selection for ZEB deployment, charging and vehicle storage strategies, provisions to ensure service reliability and changes to operational and maintenance practices required to accommodate the ZEB technology.
- **Deployment Strategy:** detailed information supporting the proposed implementation, planned phasing/scheduling and anticipated procurement approach.
- **Financial Planning:** detailed cost estimates for the project as well as the

anticipated lifecycle cost savings associated with the project relative to the baseline scenario.

- **Capacity to Implement the Technology:** description of their experience with the zero-emission technology and/or indicate that the appropriate resource capacity is dedicated to the electrification of their fleet.
- **Environmental Benefits:** relevant emissions impacts and other air pollutant calculation instructions were provided, as well as guidance for other relevant environmental benefits questions relating to ZEB deployment.
- **Project Risks and Mitigation:** description of each project risk, any mitigation strategy proposed, and the organizational capacity to manage these risks.
- **Accessibility and Community Considerations:** how the project is expected to increase or improve the accessibility of bus operations, whether the project will benefit vulnerable population by providing accessible and safe access to clean transportation, and whether the project will employ target groups or support procurement to small, medium, and social enterprises, if applicable.

The maximum amount payable through the ZETF is \$350 million for a project and the eligible period for reimbursement is March 31, 2026. The City's initial ask to fund the implementation of the infrastructure and purchase of 450 ZEBs, would have required an INFC funding contribution of \$500 million and a timeframe that aligned with the CIB credit agreement of December 31, 2027. However, with the funding and timing limit imposed by INFC, the City had to reduce the scope of the initial ZEB program to 350 ZEBs and were successful in getting approval for the maximum funding of \$350 million. The CIB credit facility of \$380 million for 450 ZEBs remains in place, but due to the reduction in the scope to 350 ZEBs it is estimated that the City will only need to drawdown on \$289 million of that amount to fund the 350 ZEBs by the end of March 2026. Additional funding from INFC would be required to increase that number to 450 ZEBs. It is possible that the ZETF funding program could have future phases or be extended past March 2026, but for now we must limit the scope of the ZEB program to 350 ZEBs to align with the funding currently approved and to remain with the City's affordability limits per the Transit LRFP.

Transit Long Range Financial Plan (LRFP)

As explained in the Zero-Emission Buses for OC Transpo report ([ACS2021-TSD-TS-0009](#)) that went to Council June 23, 2021, the Transit LRFP includes the cost of planned diesel bus purchases through to 2048. This money would be put towards electric buses with federal funding covering the added capital costs, to ensure the City is kept whole. The CIB loan program is estimated to cover the additional costs of the electric buses above and beyond the costs associated with diesel buses, with the loan amount repaid through operational savings. The INFC funding will fund the cost of the charging infrastructure, transition costs and can also be used to fund a portion of the ZEBs.

The Transit LRFP includes not only the cost of buses until 2048, but also estimates the cost of operating and maintaining these buses over that period of time, including fuel, maintenance and rehabilitation costs. The business case for implementing the ZEB program needs to consider the overall costs of diesel buses versus ZEBs, to ensure that the net financial impact is positive to the City. A comprehensive cost benefit analysis was developed, with input and advice from external experts on cost estimates, projections and analytics for the ZEBs in comparison to diesel buses, to determine if the ZEB program is projected to be cost neutral to the City. Cost estimates included the costs to purchase ZEB buses, charging infrastructure, transition costs, battery replacement costs and CIB loan financing costs based on a one per cent interest rate. Ongoing costs to maintain and operate the ZEBs and charging infrastructure were also considered.

To determine cost neutrality the following funding sources were identified:

- City of Ottawa capital budget envelope of \$348.1 million from 2022 to 2025 for the purchase of replacement diesel buses available to put towards the 350 electric buses, per the Transit LRFP;
- Expected savings of \$397 million from energy/fuel and maintenance costs net of battery replacements over the life of the ZEBs (15 years), where diesel bus fuel efficiency and maintenance costs for diesel buses were based on actual results for the average diesel bus for the past ten years. ZEB energy efficiency, ZEB maintenance costs, battery replacement costs and projections for diesel fuel were based on expert advice from various external sources; and,
- INFC funding of \$350 million from the ZETF.

Project Budget Authority Required

Table 1 summarizes the total estimated cost of this capital program:

Table 1: Estimated Cost of ZEB Program for 350 Buses

Capital Expenditure	Cost Estimate (in millions \$)
ZEB Bus Acquisition (350 buses)	653
Charging Infrastructure Costs	214
Transition Costs	107
Total	974

Table 2 summarizes the sources of funding for this program:

Table 2: Sources of Funding for ZEB Program

Funding Source	Amount (in millions \$)	Estimated % Share of Funding
CIB Loan	289	29%
INFC Funding (ZETF)	350	36%
City Funding from GHG Capital Envelope (per LRFP \$348.1 million planned)	335	35%
Total Funding	974	100%

Project budget authority approval is required for the charging infrastructure, transition costs and the first two tranches of ZEBs in order to have the infrastructure in place and the authority to contract for the first 26 ZEBs in 2023 and the next order of 77 ZEBs to be delivered in 2024. The next tranches of buses in 2025 and 2026 will be approved as part of the 2024 and 2025 budgets, respectively. Table 3 summarizes the total project budget authority sought, in addition to what has already been approved in 2022 and will need to be approved within the 2023 Budget from the transit capital envelope per the Transit LRFP for the City's portion of the ZEB purchases.

Table 3: 2023 Project Budget Authority Required for ZEB Program and Funding

	Budget (in millions \$)
IO#910626 – 2022 Bus Replacement	55
2023 Bus Replacement (to be approved as part of 2023 budget)	23
INFC Funding	350
CIB Loan	75
Total Funding Required for 2023	503

The City's portion of the budget is or will be approved as part of the annual budget process and this report seeks approval for the additional budget authority required for the external sources of funding from INFC and CIB of \$425 million. Only \$75 million of the \$380 million CIB credit facility is required for the first 103 buses. The remaining City funding and CIB loan funding required for future tranches will be approved as part of the annual budget process.

Estimated Net Savings from the ZEB Program and Financial Risks

The estimated savings from converting 350 diesel buses to electric are expected to be sufficient to cover the CIB loan principal which represents the difference in price between a new diesel bus and a ZEB, the interest cost of the CIB loan, the cost of operating and maintaining the ZEB and battery replacements for the ZEBs; with additional savings remaining to cover other costs that have yet to be determined. Table 4 summarizes the net expected savings:

Table 4: Net Savings from ZEB Program for 350 buses

(Savings)/Cost	Amount (in millions \$)
CIB Loan	289
CIB Loan Financing Charge (1%)	28
ZEB Ongoing Costs (15 years):	
Maintenance Costs	254
Energy Costs	144
Battery Replacement	91

GHG Buses Ongoing Costs (15 years):	
Maintenance Costs	(525)
Fuel Costs	(332)
Engine Overhaul	(29)
Net Savings	(80)

The \$80 million in estimated net savings, is comprised primarily of the 20 per cent retained savings that was built into the CIB loan calculation. CIB requires a maximum loan amount of 80 per cent of expected savings, with 20 per cent to be retained by the borrower. There are still many unknown factors that may add some financial risks to the ZEB program going forward that the additional savings, if achieved, could alleviate. The cost of electricity in the future is one of the key risks. Staff will explore options for hedging these utility prices to add budget certainty, but this would also increase the currently estimated cost of energy. The projected diesel fuel prices could also escalate at a greater rate than currently estimated, and if that were to happen, the savings from cost avoidance would be even greater. It is also difficult to estimate the cost of maintaining the charging infrastructure, without further analysis of the market and operational requirements for this service.

The CIB is taking the risk on achieving the savings related to ZEB maintenance costs, energy consumption/efficiency, battery replacement costs/frequency and useful life of the ZEBs as long as the City makes commercially reasonable efforts to achieve those savings. The City takes on the financial risk of variations in the estimated energy prices and average mileage of the fleet. The savings are based on a conservative assumption that each ZEB will operate for a minimum of 55,000 kilometers per year.

ZEB Program Reserve

The CIB loan agreement requires prompt payment of accrued savings on a quarterly basis, in order to pay back the loan with interest. If these savings are not achieved, the payment is deferred with interest until sufficient savings accrue. Savings could accrue in one year but not in another year, depending on multiple operating and economic factors. Staff recommend that a ZEB Program Reserve account be established to accrue and put aside all savings related to the ZEB program and that this reserve be used to repay the loan or to fund other unexpected expenditures related to this program until the CIB loan is repaid and financial/operating predictability is achieved.

Contributions to the reserve would be made from the expected savings in each budget year as part of the budget approval process. The CIB loan agreement also specifies that a reserve be established, to pay for two battery replacements over the life of each ZEB

purchased. Contributions to the ZEB Program Reserve account should include an allocation for the estimated cost of battery replacements, also from the expected savings.

FINANCIAL IMPLICATIONS

The financial implications are as described in this report. The existing authority of the 2022 Bus Replacement project IO#909864 – 2022 Bus Replacement and the 2023 Bus Replacement budget, if approved as part of the 2023 budget process, would be combined with the additional budget authority from the INFC funding and CIB loan totaling \$425 million for a total ZEB Program capital project of \$503,329,000.

Table 5 – ZEB Program Funding

	Amount
Federal Gas Tax Cash/Debt	\$78,329,000
Revenue (ZETF)	350,000,000
Transit Debt (CIB Loan)	75,000,000
Total Program Funding	\$503,329,000

LEGAL IMPLICATIONS

There are no legal impediments to approving the recommendations as outlined in this report.

COMMENTS BY THE WARD COUNCILLOR(S)

This is a City-wide report.

ADVISORY COMMITTEE(S) COMMENTS

Not applicable.

CONSULTATION

Not applicable.

ACCESSIBILITY IMPACTS

There are no accessibility impacts associated with this report. Conversion of the Para

Transpo minibus fleet from diesel to zero-emission is not in the scope of discussion in this report, as the technology is not yet available.

ASSET MANAGEMENT IMPLICATIONS

The recommendations documented in this report are consistent with the City's Comprehensive Asset Management (CAM) Program objectives. The implementation of the Comprehensive Asset Management program enables the City to effectively manage existing and new infrastructure to maximize benefits, reduce risk, and provide safe and reliable levels of service to community users. This is done in a socially, culturally, environmentally, and economically conscious manner. The acquisition of ZEBs and the supporting infrastructure aligns with the guiding principle of sustainability by considering climate impacts in the decision to acquire new assets.

As discussed within the report, when the City commits to the acquisition of new assets, consideration must also be given to the City's commitment to fund future operations, maintenance, and renewal costs. It must also account for future depreciation when reviewing long term financial sustainability. When reviewing the long-term impacts of asset acquisition, it is useful to consider the cumulative value and lifecycle costing of the acquired assets being taken on by the City.

CLIMATE IMPLICATIONS

The Energy Evolution model incorporated within the Climate Change Master Plan outlines the actions and investments required between now and 2050 to achieve the City's 100 per cent GHG emission reductions. The largest contributing sector to total corporate emissions is the transit fleet, accounting for 44 per cent of total corporate emissions. Complete electrification of the City's public transit fleet is required to achieve the 100 per cent emission reduction scenario.

The continued growth of the City's electric bus fleet along with the decommissioning of the diesel bus fleet is an essential component to achieve the targets within Energy Evolution which calls for a zero-emission transit fleet by 2030. Learnings from a growing electric bus fleet may influence the speed at which electric buses are procured, and growth will be tracked to ensure accurate emission reductions are reported in the Corporate GHG Emissions Inventory. Once fully implemented, the 350 buses are anticipated to reduce GHG emissions by approximately 30,000 tonnes annually. Actual emission reductions will be reported using real-world mileage of the electric buses, compared to equivalent emissions produced by traditional diesel buses.

ENVIRONMENTAL IMPLICATIONS

The introduction of ZEBs into OC Transpo's fleet will have a positive contribution to reduced GHG emissions and improved air quality in Ottawa.

RISK MANAGEMENT IMPLICATIONS

There are risk implications. These risks have been identified and explained in the report and are being managed by the appropriate staff.

RURAL IMPLICATIONS

The ZEBs recommended in this report would operate in both the rural and urban parts of the transit system.

TERM OF COUNCIL PRIORITIES

- This report supports the City's on-going commitment to financial sustainability and transparency.
- Integrated Transportation: Enable effective mobility through a sustainable, accessible, and connected city transportation system.
- Service Excellence Through Innovation: Deliver quality services that are innovative and continuously improve to meet the needs of individuals and communities.
- Environmental Stewardship: Grow and protect a healthy, beautiful, and vibrant city that can adapt to change.

DISPOSITION

Upon Council approval, staff from Finance Services Department and Transit Services Department will implement the recommendations of this report, including any actions directed by Council. The Chief Financial Officer/Treasurer will execute any required agreements and documentation in consultation with Legal Services.