

NY MTA Fleet Emissions Reduction: Zero-Emissions Bus Transition

Workplan

Section 1: Overall Project Summary and Approach

A. Description of GHG Reduction Measures

Project summary

The New York State Metropolitan Transportation Authority (MTA) seeks \$172,415,632 in implementation funds from the Environmental Protection Agency's (EPA) Climate Pollution Reduction Grant (CPRG) program to advance the MTA's zero-emissions bus fleet transition, a priority greenhouse gas (GHG) reduction measure in the NY-NJ Metropolitan Statistical Area (NY-NJ MSA) Preliminary Climate Action Plan (PCAP) that will significantly reduce GHG emissions. The project includes:

- Purchase of 100 40-foot battery-electric buses;
- Installation of charging infrastructure needed for these buses at three depots -- Jamaica Depot in Queens, Ulmer Park Depot in Brooklyn, and Yukon Depot in Staten Island; and
- Zero-emission workforce training and development.

The transition of 100 buses from diesel to electric will significantly reduce air pollution (Criteria Air Pollutants [CAP]), benefiting 1.1 million residents in disadvantaged communities who constitute one quarter of the total New York City (NYC) population residing in disadvantaged communities, as defined by the Council on Environmental Quality (CEQ) Climate and Economic Justice Screening Tool (CEJST). The project will improve quality of life and health for residents and workers in the communities where these buses operate, while ensuring the continued delivery of affordable and reliable transit services for MTA customers. This GHG reduction measure will result in cumulative GHG reductions of 95,054 metric tons (MT) of carbon dioxide equivalents (CO₂e) between 2025-2050.

Background

In 2018, the MTA committed to transition to a 100% zero-emission bus fleet by 2040. This transformation of the fleet necessitates an unprecedented infrastructure investment, as well as fundamental changes in MTA's bus operations. The transition to a zero-emission fleet is a key component of the MTA's commitment to reduce greenhouse gas emissions by at least 85% by 2040 (from a 2015 baseline) announced in April 2023 as part of its Sustainability Framework (<https://new.mta.info/climate>).

The transition to a zero-emissions bus fleet by 2040 will eliminate over 500,000 MT CO₂e per year, compared to 2019 MTA emissions. This program will permanently remove mobile combustion sources, provide workforce training and development, and improve the work environment and health of workers. Zero-emission bus purchases will rapidly scale up through 2029, after which all new bus purchases will be zero-emission to meet the 2040 target for complete conversion of the fleet.

To guide this transition, the MTA drafted the 2023 MTA Zero-Emission Transition Plan (<https://new.mta.info/document/120411>), earning the MTA recognition by the Federal Transit Administration (FTA) as one of four agencies advancing exemplary efforts under FTA's Sustainable Transit for a Healthy Planet initiative in 2023 (<https://www.transit.dot.gov/climate-challenge>). The plan

laid the groundwork for the transition by identifying the challenges and constraints facing the shift to zero-emission buses, outlining a strategic approach to overcome the challenges, and presenting an implementation strategy. The MTA Zero-Emission Transition Plan was included in the PCAP for the NY-NJ MSA as a “Priority Reduction Measure”. The MTA is requesting funding via the New York City, Newark, Jersey City NY-NJ MSA PCAP, which was released in March of 2024 and can be found here: <https://ny-nj-msa-cprg-njtpa.hub.arcgis.com>. Given the significance of bus electrification for state-wide decarbonization beyond the NY-NJ MSA, transit fleet electrification is also a Priority Reduction Measure in the CPRG PCAP for New York State, and the request herein is therefore aligned with New York State’s climate action plan (See <https://www.epa.gov/system/files/documents/2024-03/nys-cprg-pcap.pdf>, Section 3.2).

The NY-NJ MSA PCAP (affiliated with the project requesting funding) was developed by NYC in collaboration with the region’s two Metropolitan Planning Organizations (MPOs): the New York Metropolitan Transportation Council (NYMTC) and the North Jersey Transportation Planning Authority (NJTPA), with significant coordination among a coalition of stakeholders representing 22 counties, public transportation and port agencies in New York and New Jersey. For the NY-NJ MSA PCAP, organizational strategies, plans, and targets for the region’s largest entities include those of the MTA, New Jersey Transit (NJ TRANSIT), and the Port Authority of New York and New Jersey (PANYNJ).

The NY-NJ MSA PCAP identified the electrification of buses and medium and heavy-duty vehicle classes as a critical step to reducing GHG emissions in the NY-NJ MSA. The electrification of transit fleets, including the MTA’s bus fleet, is identified as a Priority GHG Reduction Measure (NY-NJ MSA PCAP, page 51). These priority measures were designed to address the region’s largest sources of GHG emissions across the sectors of transportation, stationary energy, and waste. The measures were based on ongoing GHG reduction efforts/initiatives within the region, part of decades-long climate action planning processes undertaken by various local, regional, and cross-jurisdictional entities operating in the region. Mass transit has added significance beyond climate benefits; it is an engine for equity in the region. Approximately 95.8% of NYC residents live within a ¼-mile walking distance of a bus stop, making bus service a backbone of accessible, affordable transit.

The MTA Bus Fleet Transition

The MTA is transitioning to zero-emissions buses in four stages, closely aligned with the MTA’s five-year capital planning process,

- **Stage 1 - 2015-2019 and 2020-2024 Capital Programs**

During Stage 1, the MTA plans to purchase and deploy 560 battery-electric buses.

Stage	Phase	Total Buses
1	Phase “0”	15
	Phase 1	60
	Phase 2	220*
	Phase 3	265

Note: Phase 2 is comprised of 205 buses from vendor selected for base contract (180 of which are funded under FY22 Low-No Emissions grant program) and 15 test buses from other vendors.

The MTA is seeking CPRG funding to purchase 100 Standard battery-electric buses under the third phase of Stage 1. The 100 buses will replace existing diesel buses at three depots that serve vulnerable communities most impacted by poverty and poor air quality (See Figure 1).

As shown in the table above, to supply the majority of buses in the second phase, the MTA executed a base contract for 205 buses, which will be delivered starting 9/15/25. This same contract also includes an option for 193 Standard and 72 Articulated buses (265 total), which comprises the third and final phase of Stage 1.

- **Stage 2 - 2025-2029 Capital Program**

In Stage 2, the MTA plans to switch to 100% zero-emission fleet purchases. Stage 2 will roughly double the number of purchases in Stage 1, with an expected total of 1,000 zero-emission buses. This stage is expected to include the first purchase of zero-emission Express buses. Most purchases are expected to be battery-electric, though some hydrogen fuel cell purchases will be considered.

- **Stage 3 - 2030-2034 Capital Program**

Stage 3 will again almost double the number of zero-emission bus purchases from the prior stage, from 1,000 up to 1,970. All new buses purchased in this stage will be zero-emission. The selection of propulsion type will be informed by experience to date. By Stage 3, one-third of the fleet will be zero-emissions.

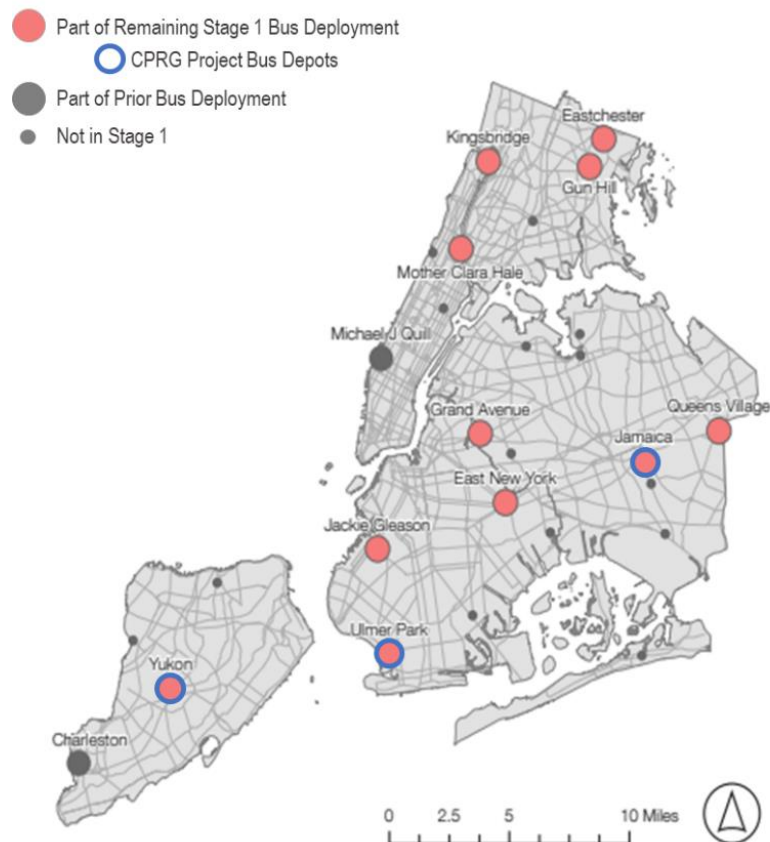
- **Stage 4 - 2035-2039 Capital Program**

Stage 4 will complete the transition. An expected total of 3,300 zero-emission buses will be purchased; as in Stage 3, the propulsion type of these purchases will depend on experience to date. A projected 2,385 remaining buses that are not zero-emission will be retired and replaced.

Each bus deployment will be accompanied by a supporting project to install charging infrastructure needed for the new fleet. During the development of the 2023 MTA Zero-Emission Transition Plan, depots were selected to receive electric buses based on the following criteria:

- Environmental Justice (EJ) and Air Quality – Locations with the highest EJ Scores (described in Section 4a) were prioritized for earlier and larger zero-emission bus deployments.
- Borough Distribution – Locations were prioritized to meet public expectations of fairness, share the benefits of zero-emission buses with as many communities as possible, and expand operating staff experience and familiarity.
- Power Supply – Locations with existing available power supply were selected to limit the number of large power projects required.
- Construction Feasibility – Depots were selected that have facility space and suitable architectural, electrical, and operational conditions to support the installation of charging infrastructure with minimal disruption and cost.
- Schedule Feasibility – New zero-emission buses will be deployed to locations where route lengths can be accommodated by vehicle range.

Figure 1: Stage 1 Bus Deployment Locations (Adapted from 2023 MTA Zero-Emissions Transition Plan, Page 31)



Although risk mitigation has been incorporated into the planning of the bus zero-emission transition, there are multiple factors that could slow or impede implementation, including:

- Supply chain bottlenecks delaying bus delivery;
- Material supply bottlenecks delaying Jamaica Bus Depot reconstruction and substantial completion of the bus parking lot with charging bank;
- Reliance on the public utility to complete utility-side infrastructure upgrades at Ulmer Park Depot.

All of the above factors pose risks to the timely implementation of the proposed GHG reduction measure and will be formally managed with a risk register that incorporates budget, schedule, cybersecurity, technology, and regulatory risks (along with appropriate mitigations).

The project timeline extends from date of award of the bus procurement contract through expected completion at the end of Q1 2027. The MTA has not yet exercised the contract option that includes the 100 battery-electric buses that are the subject of this application. Every effort will be made to align that decision date with the expected award date so that costs are incurred within the eligible period (NOFO Section II.E) up to 90 days before award.

The project milestones are provided below in Section 3c.

B. Demonstration of Funding Need

Full implementation of MTA's transition plan for its 5,800 buses is expected to cost over \$23 billion. \$Y is included the MTA's approved current and prior capital program. The 30% (\$73.9 million) match to this grant would be provided through the current 2020-24 Capital Program. This request for the remaining 70% (\$172.4 million). This estimate considers the increased capital cost for electric buses and includes funds to support the necessary workforce training and development efforts needed for the new technology. Capital procurement costs for battery-electric buses have risen nearly 30% since 2022 due to rising supply chain costs, placing an additional burden on the procurement of electric vehicles.

In addition to MTA local funding for the zero-emission transition, MTA received \$116M from the Federal Transit Administration's (FTA) FY 2022 Low-No Emissions grant program contributing to the cost of 180 electric buses in the second phase of Stage 1.

The MTA has a long history of partnership with the New York State Energy Research and Development Authority (NYSERDA). NYSERDA provides research, development, and deployment of funding through competitive Program Opportunity Notices (PONs) to advance state-of-the-art electric vehicle systems. The MTA is currently utilizing \$8M of funding from NYSERDA's Clean Transportation Prize Program to deploy two hydrogen fuel cell buses and install a hydrogen fueling station at the Gun Hill Depot in the Bronx. This project will serve as an important demonstration of a potential zero-emission alternative for the bus transition.

The MTA also intends to exhaust clean energy tax incentive funding provided under the Inflation Reduction Act. With the 30C Credit for Alternative Fuel Vehicle Refueling/Recharging Property and 45W Commercial Clean Vehicle Credit, tax-exempt entities can make an elective payment to receive a full refund equal to the applicable tax credit amount. Under 30C, charging properties placed in service after 12/31/22 must be in eligible census tracts, which would include all charging at Jamaica Depot and Ulmer Park Depot (90 of the project pantographs), and would be eligible for a credit amount up to 30% (max \$100,000). In addition, since the buses will be purchased from a qualified manufacturer, each bus would be eligible for a 45W credit of the lesser of 30% or the incremental cost of the clean vehicle, up to \$40,000.

Workforce Training and Development

Throughout the transition the MTA is committed to continuous collaboration with its union partners, ongoing communication with staff on their experience and needs, and the provision of robust training and support, so that existing and new employees alike are capable and confident working on the new technology. Preparing for this workforce transition requires establishing new operating practices and policies, and updating and expanding the skill sets and training resources provided to MTA staff. 5% of the CPRG award will be earmarked for zero-emission workforce training.

MTA's zero-emission workforce training and development program will consist of the following goals and elements:

- Ensuring the continued safe and efficient operation of bus service;
- Offering paid training for MTA staff as well as paid apprenticeships for local Career and Technical Education (CTE) students;

- Developing digital training materials to facilitate remote learning and reach a broader audience; and
- Implementing a marketing campaign on MTA's zero-emission transformation to attract students to CTE schools and technical careers.

A challenge of the workforce transition will be keeping up with the continually evolving technology. As technology changes, bus operations and maintenance will also change, as will required staff skills and training. The MTA's workforce transition strategy is to remain flexible to adapt to ongoing changes and technological innovations, while ensuring that staff are fully prepared for each progressive step in the transition.

C. Transformative Impact

The MTA operates the largest public bus system in North America, operating 10% of all public transit buses in the United States and carrying more than 16% of the nation's bus passengers. As such, its transition will have the potential to serve as a model for smaller transit systems. A zero-emission transition for the MTA bus fleet will not only pave the way by example for other transit agencies across the United States but could also influence the electric bus industry by encouraging electric bus manufacturers to increase production to meet the MTA's demand.

More broadly, the MTA is committed to delivering sustainable public transportation. As North America's largest transportation transit network, the MTA has historically served approximately 8.6 million customers each weekday. Furthermore, the MTA's operations address congestion and support the dense, energy-efficient land use patterns that make NYC's per capita greenhouse gas emissions one of the lowest in the nation. By providing transit service, the MTA directly helps the region avoid a net 20 million metric tons of greenhouse gas emissions annually (<https://new.mta.info/climate>).

MTA's bus transition program has been spread among six depots in Brooklyn, Bronx, Staten Island, and Queens (including the three proposed in this application), based on the EJ Scores in the MTA Zero-Emission Transition Plan (described in Section 4a). Given the complexity and site-specific nature of depot modifications, the MTA is developing and distributing customized plans for each depot to guide facility management personnel training.

Section 2: Impact of GHG Reduction Measures

A. Magnitude of GHG Reductions from 2025 through 2030

The MTA is applying for funding to purchase 100 40-foot battery-electric buses and install complementary electrical charging infrastructure at the three bus depots – Jamaica Depot, Ulmer Park Depot, and Yukon Depot – where these 100 buses will be assigned. As buses are delivered, an equivalent number of buses from the 2011 diesel fleet will be permanently decommissioned. Decommissioned buses are stripped of any auxiliary accessories, like cameras, that are reusable, and the body and engine are sent to a scrapyard where engines are rendered unusable. Since the proposed project includes permanent removal of 100 diesel transit buses from NYC streets, the GHG emission reductions will be significant and long-lasting.

By the end of 2030, all 100 battery-electric buses are expected to have been delivered to Jamaica Depot (60 buses), Ulmer Park Depot (30) and Yukon Depot (10), and an equal number of fossil fuel buses will be permanently scrapped.

The magnitude of cumulative GHG emission reductions is provided below, reported in MT CO₂e using the 100-year Global Warming Potentials (GWP) from the International Panel on Climate Change (IPCC) Fifth Assessment Report.

Following the guidance in the NOFO, to calculate these GHG emissions reductions, the MTA has defined a “Reference Scenario” against which to compare the proposed “Project Scenario”. The Reference Scenario that the MTA will use to calculate emissions reductions assumes a business-as-usual case, what would have been done if MTA did not have a zero-emission bus transition plan. The Reference Scenario assumes that 100 buses will be replaced with 100 new model year 2025 diesel buses. By comparison, the Project Scenario assumes that 100 buses will be replaced with 100 new model year 2025 battery-electric buses.

GHG Reduction Measure	MT CO ₂ e Reduced 2025-2030
Replacement of 100 40’ low-floor diesel transit buses with 100 40’ low-floor battery-electric buses and installation of complementary charging infrastructure at 3 depots	11,945

Note: MT = Metric tons. MT CO₂e includes all relevant greenhouse gases (CO₂, CH₄, N₂O), converted to MT CO₂e using IPCC Fifth Assessment Report.

B. Magnitude of GHG Reductions from 2025 through 2050

As discussed in (a) above, cumulative GHG emission reductions are expected to be permanent, since the project will permanently remove GHG emission sources, i.e., combustion engines in 100 diesel transit buses. Substantial completion of charging infrastructure construction at the three depots is anticipated by 9/1/26, and bus delivery is anticipated to be complete by 3/31/27. The upgraded depots and battery-electric fleet will continue operating through 2050.

The magnitude of cumulative GHG emission reductions provided by the GHG reduction measure is shown below, reported in CO₂e using the 100-year GWPs from the IPCC Fifth Assessment Report.

GHG Reduction Measure	MT CO ₂ e Reduced 2025-2050
Replacement of 100 40’ low-floor diesel transit buses with 100 40’ low-floor battery-electric buses and complementary charging infrastructure	95,054

Note: MT = Metric tons. MT CO₂e includes all relevant greenhouse gases (CO₂, CH₄, N₂O), converted to MT CO₂e using IPCC Fifth Assessment Report.

C. Cost Effectiveness of GHG Reductions

The cost effectiveness of GHG reductions over 2025-2030 is calculated below using the formula provided in the notice of funding opportunity (NOFO).

Cost effectiveness of GHG reductions = (Requested CPRG funding) / (Sum of Quantified GHG reductions from CPRG funding from 2025-2030)

GHG Reduction Measure	Requested CPRG Funding (Section 7)	Sum of Quantified GHG Reductions from CPRG Funding 2025-2030	Cost Effectiveness
Replacement of 100 40' low-floor diesel transit buses with 100 40' low-floor battery-electric buses and complementary charging infrastructure	\$172,415,632	11,945	14,434 \$/MT CO ₂ e

Project costs for buses are based on an MTA-negotiated procurement as of December 2023.

D. Documentation of GHG Reduction Assumptions

Please see attached Appendix C explaining the methodology and assumptions used to develop the estimated GHG reductions, as well as the GHG emission reduction calculations spreadsheet where the calculations were performed.

Section 3: Environmental Results – Outputs, Outcomes, and Performance Measures

A. Expected Outputs and Outcomes

The proposed GHG reduction measure, i.e., the project, is comprised of replacement of 100 40-foot diesel transit buses with battery-electric vehicles and complementary charging infrastructure at three depots that will house the buses – Jamaica Depot (60 of 100), Ulmer Park Depot (30) and Yukon Depot (10).

The following outputs are expected:

1. 100 40-foot battery-electric transit buses deployed and operational.
2. 60 pantograph chargers operational at Jamaica Depot, 30 at Ulmer Park Depot, and 10 at Yukon Depot.
3. Jamaica, Ulmer Park, and Yukon Depot staff trained under workforce development program.

Semi-annual progress and final reports will also be project outputs but are not considered unique to this application and so not listed above.

The following outcomes are expected:

1. Reduced emissions of greenhouse gases (CO₂, CH₄, N₂O).
2. Reduced co-pollutant emissions of particulate matter (PM) 2.5, PM10, carbon monoxide (CO), nitrous oxides (NO_x), and volatile organic compounds (VOC), leading to improved local air quality for employees and local communities.
3. Reduced noise impacts for employees and local communities.

4. Reduced diesel consumption at Jamaica Depot, Ulmer Park Depot, and Yukon Depot.
5. Reduced regulated fuel waste at Jamaica Depot, Ulmer Park Depot, and Yukon Depot.
6. Reduced worker exposure to air pollution in depots from improved indoor environmental quality (once the fleet has been fully transitioned).

Of these, all outputs and outcomes will be tracked with performance measures (see Section 3b).

Overview of Expected Outcomes

A major benefit of MTA's transition to a zero-emission bus fleet will be the total elimination of: diesel demand, direct greenhouse gas emissions, *and* most criteria air pollutants typically produced from operating conventional diesel-powered transit buses. Combustion engines, and particularly diesel-burning engines, produce not only significant fuel demand (average fuel economy last year for 40-foot diesel buses was 4.1 mpg) and GHG emissions that contribute to global warming, but can also produce a range of criteria air pollutant (CAP) emissions. The MTA's diesel buses have engine exhaust aftertreatment that scrubs out many of these pollutants to minimize emission levels that can lead to negative health impacts on transit workers, riders, and local communities along bus routes; electric buses will completely eliminate engine exhaust altogether. According to EPA's EJ Screen, NYC is in the 90th percentile or higher on five indices of environmental hazards, including the National Air Toxics Assessment (NATA) for diesel particulate matter, compared to the US. Diesel pollution from trucks and buses is responsible for 170 deaths attributable to fine particulate matter each year in NYC, with the worst burden on communities with the highest rates of poverty (Kheirbek et al. 2016, <https://ehjournal.biomedcentral.com/articles/10.1186/s12940-016-0172-6>). Although some particulate matter emissions are debris from brake and tire wear, the proposed project will eliminate all combustion-related greenhouse gases and CAPs (PM, NOx, CO, VOCs).

In addition to emission reductions, the MTA expects reductions in local exterior noise pollution. The replacement buses are approximately 16% quieter than the existing diesel bus fleet when idling (Marcon 2016, https://www.edmonton.ca/public-files/assets/document?path=transit/ets_electric_feasibility_study.pdf). Another benefit of the measure will be a reduction in fuel truck traffic since there will be no need for fuel deliveries to refuel tanks for these 100 buses at the three depots. Removing combustion engine buses from the fleet will also reduce waste from oil and engine coolant changes.

Preliminary Quantification of Expected Outcomes

The MTA has quantified expected GHG emissions reductions in Section 2 above.

MTA's commitment to equity, community well-being, and consideration of how our initiatives promote improved environmental quality has led us to quantify CAP emissions reductions expected from the proposed project. These calculations were performed using the EV Transit Bus Replacement Tool from the Federal Highway Administration's (FHWA) Congestion Mitigation and Air Quality (CMAQ) Program toolkit ([a suite of Excel-based calculators](https://www.fhwa.dot.gov/environment/air_quality/cmaq/toolkit/index.cfm#sect1f) for agencies to estimate CAP reductions). This tool uses results from a national-scale model run of MOVES3 to provide users with emissions reduction results. The tool and related documentation are available on FHWA's website (https://www.fhwa.dot.gov/environment/air_quality/cmaq/toolkit/index.cfm#sect1f).

The EV Transit Bus Replacement Tool was used to estimate annual CAP emissions reductions for the 100 buses at the three depots. The results are presented in Table 1 below.

Table 1: Preliminary Estimate of CAP Emissions Reductions from the Project.

Pollutant	Kg/day	Kg/year
Carbon Monoxide (CO)	9.63	3,514.7
Particulate Matter <2.5 µm (PM _{2.5})	0.02	7.1
Particulate Matter <10 µm (PM ₁₀)	0.02	7.7
Nitrogen Oxide (NOx)	11.75	4,289.1
Volatile Organic Compounds (VOC)	0.23	84.2

Note: Calculations are provided as tab with GHG emissions calculations in attachment GHGcalcs_MTA.xlsx. Inputs to calculator include Project Evaluation Year = 2027 (first year project buses are in service), Current Bus Model Year = 2025, Fuel = Diesel (this is Reference Scenario, or what would occur in the absence of the proposed GHG measure). Annual VMT calculated for each depot (Jamaica = 60 buses X 21,560 mi/bus/yr; Ulmer Park = 30 buses X 21,215 mi/bus/yr; Yukon = 10 buses X 28,633 mi/bus/yr). For purposes of this estimate, the savings in Evaluation Year 2027 are shown, but annual savings increase as buses age and so are expected to be higher in subsequent evaluation years.

B. Performance Measures and Plan

The MTA will track, measure, and report progress towards achieving all outputs and outcomes outlined in Section 3a above using quantitative measures where data collection is feasible and qualitative descriptions otherwise (for Outcome #3 and #6 only). The MTA will report qualitatively on reduced noise pollution and depot pollutant levels and work to define a performance measure for these outcomes (e.g., background noise sampling, air quality monitoring in depots), which will then be added to the list below, disclosed to EPA, and included in future reporting. For all measures below, the MTA has already established data collection and analysis workflows. The MTA has designated staff to coordinate with relevant parties within the organization to collect data on the following performance measures during each reporting period until the end of the period of performance.

List of Performance Measures

1. Cumulative number of staff engaged under workforce development program.
2. Number of days battery-electric project buses available for service.
3. Vehicle miles traveled (VMT) by battery-electric project buses.
4. Average uptime for project pantographs at Jamaica Depot, Ulmer Park Depot, and Yukon Depot.
5. Reduction in annual metric tons of GHG emissions.
6. Reduction in cumulative metric tons of GHG emissions from 2025 through calendar year 2030.
7. Reduction in cumulative metric tons of GHG emissions from 2025 through calendar year 2050.
8. Reduction in annual CAP emissions.
9. Reduction in annual CAP emissions in low-income and disadvantaged communities.
10. Reduction in annual diesel consumption at Jamaica Depot, Ulmer Park Depot, and Yukon Depot.
11. Reduction in annual volume of oil waste at Jamaica Depot, Ulmer Park Depot, and Yukon Depot.

The MTA is committed to providing semi-annual progress reports and a detailed final report that meet the reporting requirements outlined in the NOFO. The MTA expects to start reporting quantitative results for each measure in accordance with the submission schedule established with EPA.

Details for each performance measure are presented below. Where a reporting period concludes before all buses are delivered or bus charging infrastructure is placed in service, data on the measure will be provided up to the end of the reporting period.

Measure 1: Workforce Training

The number of people trained will scale up as the number of buses deployed at the depots increases over the course of the transition. NYCT will collect training records from MTA's Buses Safety & Training Department to track the number of depot employees trained as the buses are deployed. MTA is already tracking training to support the overall transition to zero emissions and plans to report specifically on training funded by EPA, if EPA funding is provided.

Measure 2: Vehicle Availability

The MTA will use vehicle status data managed by MTA's Buses Business Process Group to identify, track, and report the average percentage of project buses available for daily service over each reporting period.

Measure 3: VMT by Project Buses

The MTA will use vehicle odometer data managed by MTA's Buses Business Process Group to collect, track, and report vehicle mileage for the 100 project buses during each reporting period. The vehicle mileage data will be used for calculating Measures 5-7 and 8-9.

Measure 4: Charging Infrastructure Availability

The charge management software provides real-time data on pantograph usage. Trending data for pantographs at the depots will be aggregated to calculate the uptime, i.e., percentage of in-service time, over the reporting period. Uptime will be calculated, tracked, and reported.

Measures 5-7: GHG Emissions Reductions

The MTA annually prepares an organizational GHG inventory for The Climate Registry (TCR), a best-in-class program for government reporting on greenhouse gas emissions (<https://new.mta.info/sustainability/carbon-accounting>). MTA's GHG inventory adheres to the General Reporting Protocol v3 standard and is verified by an external auditor. Reports are made public in an aggregated format on the MTA's website. The MTA maintains a detailed view of the inventory, by emission source and greenhouse gas, for internal use.

Project completion is expected by 3/31/27. As discussed in Section 2 above, the MTA has defined a Reference Scenario against which to compare the proposed Project Scenario to calculate GHG emissions reductions (and CAP emissions reductions, see Measures 8-9 below). The Reference Scenario that the MTA will use to calculate GHG emissions reductions assumes that 100 buses would have been replaced with 100 new model year 2025 *diesel* buses (rather than battery-electric buses as in the proposed project) and would have been operated similarly – traveling the same distance as the 100 project buses actually traveled. As such, for this performance measure, the Reference Scenario GHG emissions will be calculated by multiplying emissions rates for modern diesel buses by measured VMT. These diesel bus emissions rates will be sourced from actual measurements of the performance of MTA's newest 40-foot diesel buses to ensure data is as representative as possible. Project Scenario emissions will be calculated

using data on electricity consumption for bus charging from the charge management software at each of the three depots and the same emission factors used in that year’s organizational GHG inventory. The difference will be the annual GHG emissions reductions, which can be reported for each calendar year in the performance period, estimated for years beyond the grant term, and as a cumulative total of multiple years.

Measures 8-9: CAP Emissions Reductions

In the absence of monitoring technology for CAP emissions during bus service, the MTA will use a distance-based method for measuring and reporting on CAP emissions reductions achieved for CO, PM2.5 and PM10, NOx, and VOC.

Each year, the MTA will use the EV Bus Replacement Tool (described in Section 3a), inputting actual recorded activity data and making the selections shown below in Table 2. The tool compares two scenarios and so can be readily used to compare the Reference Scenario and Project Scenario described herein. The 100 buses requested in this application are expected to be model year 2025, so the model year inputted will be 2025 and can be updated to align with actual buses purchased. The resulting table “Output: Emissions Reductions” shows the daily emissions difference between these scenarios and will be downloaded, multiplied by 365 to produce annual results, and will be saved for reporting purposes.

Since the outputs are based on total VMT, the annual emissions reduction output will be multiplied by the percentage of route-miles serviced by the three depots that pass through disadvantaged census tracts identified using the U.S Climate Resilience Toolkit’s Climate and Economic Justice Screening Tool (CEJST) in order to quantify the portion of reductions that will benefit low-income or disadvantaged communities.

Table 2: Inputs to EV Transit Bus Replacement Tool for Calculating CAP Emissions Reductions

Tool Field	Selection
Project Evaluation Year	Reporting year of interest (e.g., 2028 if quantifying annual reductions in 2028)
Project Components	EV Transit Bus Replacement
Model Year of Reference Scenario Buses (Note: This is called ‘Current’ in tool)	2025
Conventional Fuel of Reference Scenario Transit Buses (Note: This is called ‘Current’ in tool)	Diesel
Fleet Activity	VMT in the given reporting period for the 100 project buses
Model Year of Project Scenario Buses (Note: This is called ‘Replacement’ in tool)	2025

Measure 10-11: Fuel and Fuel Waste Reductions

As with other proposed measures that are relative metrics, the MTA will treat calendar year 2026, prior to project completion, as the baseline year for calculating these two measures.

The MTA prepares an organizational GHG inventory for The Climate Registry annually (see Measure 5-7 above); this includes collecting all bulk fuel invoices, such as diesel deliveries to Jamaica Depot, Ulmer Park Depot, and Yukon Depot. The amount of diesel delivered to each of the three depots will be calculated from utility invoices for the three depots for 2026 and the following years. From year 2027 and beyond, through the end of the performance period, reductions from 2026 levels will be calculated, tracked, and reported.

Similarly, under SARA Title 4, and NYCT Office of System Safety policy instruction 10.27.1 (http://tens.nyct.com/mtatoday/NewPI/safety/10_27_1.pdf), facility managers will measure waste disposal of regulated waste streams (including oil) at each depot. Facility managers maintain and store waste manifests. These facility managers at the three depots will measure the amount of oil waste disposed in 2026 and the following years. In year 2027 and beyond, reductions from 2026 levels will be calculated, tracked, and reported.

C. Authorities, Implementation Timeline, and Milestones

If this grant is awarded to the MTA, grant implementation will be managed by the MTA's Capital Finance Management (CFM) group, ensuring grant budget tracking, and reporting to meet all regulatory requirements. The Program, spearheaded by the MTA's Department of Buses Zero-Emissions team, will encompass comprehensive zero emissions program management, including strategic planning, implementation, and program monitoring to ensure that emissions, EJ benefits and capital planning targets as described in this application are appropriately met. Additionally, the team will conduct zero emission training sessions to equip MTA depot staff with the necessary skills and knowledge for seamless integration with the existing fossil-fuel fleet. Collaborating closely with the Chief Maintenance Officer the team will also oversee bus maintenance procedures, ensuring adherence to MTA standards to manage/track fleet mean time between failures (MTBF), availability and optimization of fleet state of good repair (SOGR).

Procurement procedures will be handled by MTA's Procurement Department, leveraging their extensive expertise in federal procurements to allocate necessary contracting resources in compliance with all relevant regulations. All contracts pertaining to the project will undergo thorough review and approval processes by MTA's Legal Department, safeguarding legal compliance and minimizing potential risks. This effort entails comprehensive legal analysis, including contract drafting, negotiation, and interpretation, to ensure alignment with zero emissions sustainability frameworks and to mitigate potential liabilities.

Lastly, the Climate Sustainability Planning group will play a crucial role in the management of this federal grant, ensuring that stated grant objectives align with broader climate objectives and regulatory requirements pertinent to the MTA as well as to the New York City, Newark, Jersey City NY-NJ MSA PCAP. Climate Sustainability Planning will be responsible for coordinating with relevant parties to collect data on the Performance Measures during the reporting period (including updated calculations quantifying changes in co-pollutant emissions from the proposed project over the measure's lifetime,

and benefits to low-income and disadvantaged communities), which will be provided to CFM for reporting.

Since the buses to be purchased are using an option on an existing MTA procurement contract, the MTA will not have difficulty expeditiously obligating the federal funds.

The detailed implementation timeline is provided below.

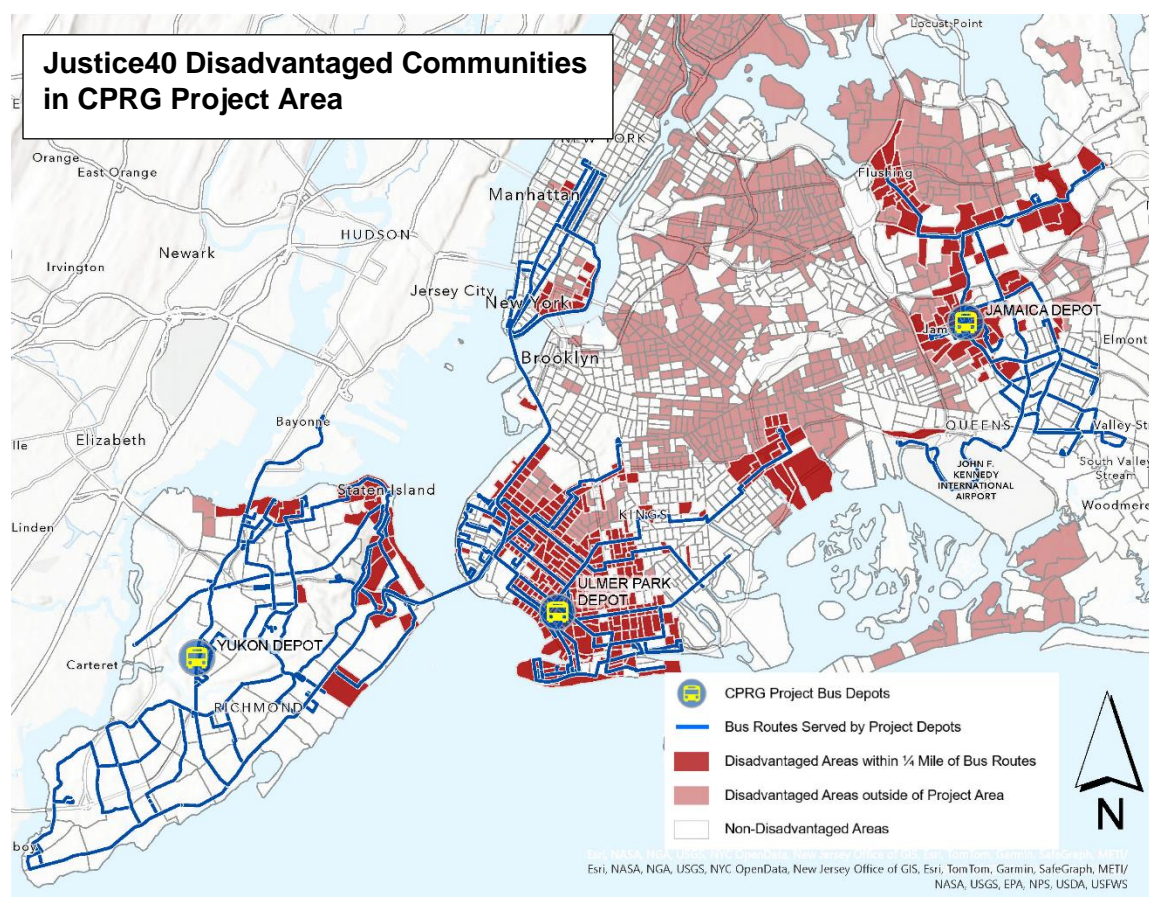
Timeline Item Description	Timeline Item Date
Option on Awarded Contract Exercised	Q3 2024
Workforce Development and Training Begins	5/30/2026
Infrastructure Deployment Completed (Jamaica, Ulmer Park, and Yukon depots)	9/1/2026
Bus Delivery and Deployment Begins	9/25/2026
Bus Delivery and Deployment Completed	3/31/2027

Section 4: Benefits and Community Engagement

A. Community Benefits

MTA's buses serve a disproportionate share of low-income and minority households compared to other modes of transportation, including subways, commuter rail, and personal vehicles. Buses provide communities with crucial access to employment, healthcare, and other daily needs, particularly for trips that occur within a single borough, trips that do originate or end in Manhattan, and trips made by people with disabilities. The 100 zero-emission buses operating out of the Jamaica, Ulmer Park, and Yukon depots will serve 44 bus routes, ensuring that the over 170,000 average weekday riders (NYCT Ridership May 2023) on these routes have reliable transit access, while reducing the serious health impacts that result from diesel emissions (See Figure 2).

Figure 2: Justice40 Disadvantaged Communities in CPRG Project Area



Note: Justice40 establishes a federal government-wide goal that 40 percent of the overall benefits of certain Federal investments flow to disadvantaged communities that are marginalized, underserved, and overburdened by pollution. Formal guidance M-23-09 requires programs to use the new Climate and Economic Justice Screening Tool (CEJST) to identify these disadvantaged communities, which the MTA has done for the purposes of this application.

The GHG reduction measure impacts identified in Section 2 will additionally benefit the disadvantaged communities at large, including populations who do not rely on the MTA's buses for daily travel. As detailed in Table 3 below, over 1.1 million residents who live in disadvantaged communities within a one-quarter mile of the 44 bus routes receiving zero-emission vehicles will benefit from reduced emissions.

Table 3: Population in Disadvantaged Areas within ¼-mile of Bus Routes Operated out of Project Depots

Location	Disadvantaged Population
Kings County (Ulmer Park Depot)	749,867
Queens County (Jamaica Depot)	263,386
Richmond County (Yukon Depot)	80,616
New York County*	49,096
Total	1,142,965

Note: While none of the three depots are in New York County (Manhattan), bus routes operating out of the 3 depots do serve neighborhoods in Manhattan, which will also benefit from improved air quality.

The MTA recognizes the importance of prioritizing historically underserved communities, areas that have been burdened by environmental injustice, and areas that are most affected by air pollution and climate change. To support this commitment, the MTA has developed an EJ Scoring framework that incorporates EJ priorities into the electric bus deployment phasing process and supports a more sustainable and inclusive transit system. Eliminating mobile greenhouse gas emissions and CAPs significantly improves conditions for low-income and historically disadvantaged communities.

The MTA ambitiously plans to electrify its entire fleet of 5,800 buses by 2040, targeting areas that are historically disadvantaged and experienced environmental discrimination through historic neglect, air pollution and disenfranchisement (See the 2023 MTA Zero-Emission Transition Plan, <https://new.mta.info/document/120411>). For many low-income NYC residents, buses represent the primary form of public transportation. However, these buses also generate air and noise pollution. Prioritizing the electrification of buses that serve low-income communities reflects the MTA’s focus on equity. According to the Mailman School of Public Health, hospitalizations in New York due to asthma are among the highest in the country (<https://www.publichealth.columbia.edu/research/centers/columbia-center-childrens-environmental-health/our-research/health-effects/asthma>). People living near bus depots are more susceptible to particulate matter (PM) exposure and its attendant health effects – respiratory, diabetes and even premature death (Ngoc et al. 2018, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6313690/>).

The MTA began piloting electric buses in 2017. As part of the pilot, the MTA leased ten battery-electric buses and installed chargers at depots throughout NYC. The depots were selected almost exclusively on the basis of location within low-income and minority communities impacted by poor air quality, using a custom impact-focused EJ Scoring framework created by the MTA. The depots in this project (see Figure 1) were selected based on this EJ Scoring, which is described in more detail at the end of this section.

Each bus deployment will be accompanied by a supporting project to install charging infrastructure needed for the new fleet. During the development of the 2023 MTA Zero-Emission Transition Plan, depots were selected to receive electric buses based on the following criteria:

- Environmental Justice (EJ) and Air Quality – Locations with the highest EJ Scores (described in Section 4a) were prioritized for earlier and larger zero-emission bus deployments.
- Borough Distribution – Locations were prioritized to meet public expectations of fairness, share the benefits of zero-emission buses with as many communities as possible, and expand operating staff experience and familiarity.

- Power Supply – Locations with existing available power supply were selected to limit the number of large power projects required.
- Construction Feasibility – Depots were selected that have facility space and suitable architectural, electrical, and operational conditions to support the installation of charging infrastructure with minimal disruption and cost.
- Schedule Feasibility – New zero-emission buses will be deployed to locations where route lengths can be accommodated by vehicle range.

As discussed in Section 3, the MTA’s performance plan for the project will include assessing, quantifying, and reporting on multiple outcomes that confer significant community benefits, such as GHG emissions reductions and CAP emissions reductions (specifically CO, PM2.5, PM10, NOx and VOCs).

Per the Reporting Requirements of the NOFO, in the second semi-annual progress report due after grant award, the MTA will not only report actual performance in the reporting period but will also use primary activity data on VMT by the 100 buses to update the long-term (through 2050) quantitative analysis of GHG emissions and CAP emissions reductions provided in Sections 2 and 3 of this application. These GHG reductions will benefit communities within a large geographic area by mitigating the concentration of heat-trapping gases in the atmosphere that cause global warming.

For CAP pollution, the MTA will quantify emissions reductions using FHWA’s CMAQ Program EV Bus Replacement Tool, consistent with methods outlined in Section 3. This tool estimates CAP emission reductions based on VMT by the project buses in a given reporting period and can be used to estimate reductions beyond the grant period. The results can be multiplied by the share of VMT in historically disadvantaged tracts (according to CEJST) to determine what portion of CAP reduction benefits accrue to overburdened communities compared to communities not facing significant burdens. In this way, the MTA will be able to report transparently on how – and at what magnitude – CAP reduction benefits are directed to populations in need.

MTA’s Custom EJ Scoring Framework

The EJ Score is calculated at both the route level and the depot level, using a weighted sum of two indicators: Areas of Concentrated Need (weighted 55%) and Air Quality Index (weighted 45%). The resulting combined EJ Score uses a scale of 0 to 100. A diagram explaining how route- and depot- level scores for each indicator were calculated and combined into route- and depot-level EJ Scores for all 28 MTA depots is included in the 2023 MTA Zero-Emission Transition Plan (<https://new.mta.info/document/120411>).

The first indicator, Areas of Concentrated Need, focuses on equity, combining the eight metrics shown in Table 4 below to score census block groups on a scale of 0 to 100 and designating block groups with score above 50 as “areas of concentrated need.” The share of stops located in areas of concentrated need is the basis for the “route score” for this indicator. The “depot score” for this indicator is an average of route scores for all routes operating out of the depot.

The second indicator is the Air Quality Index, which uses the nine metrics shown in

Table 5 below. The “route score” for this indicator analyzes the average air quality index within a 250-foot buffer of the route. The “depot score” for this indicator is based on both the route scores for routes operating out of that depot and air quality within 1/4-mile of the depot.

Table 4: Areas of Concentrated Need Metrics and Weights (Source: 2023 MTA Zero-Emissions Transition Plan, Page 34)

Weight Category	Theme	Metric	Weight
High	Minority	Race (minority population, all except White Alone)	10
	Transit Dependency	Zero-vehicle households	10
	Low Income	Households in poverty	9
	Access to Opportunity	Commute time 45 minutes or more in NYC; 60 minutes or more outside NYC	9
Mid	Mobility Needs	People with disabilities	6
	Minority	Limited English Proficient (LEP); English as a Second Language (ESL) households	5
Low	Transit Dependency / Mobility Needs	Age (under 18 and over 75 in NYC; over 75 outside NYC)	3
	Access to Opportunity	Level of educational attainment	1

Table 5: MTA Air Quality Index Pollution Measures and Weights (Source: 2023 MTA Zero-Emissions Transition Plan, Page 36)

Category (Weight)	Metric	Health Impacts	NYC Max Vs. Health Standard	NYC Avg Vs. US Avg
High (60)	Fine particulate matter (PM2.5)	Exposure can affect lung function and worsen asthma and heart disease. Long term exposure may be associated with chronic bronchitis, reduced lung function, lung cancer and heart disease.	Exceeds	93%
	EPA air toxics respiratory hazard index	Noncancer health impacts of hazardous air pollutants include effects on the respiratory system, the immune, nervous, and reproductive systems, and to organs such as the heart, liver, and kidneys	Exceeds	216%
	EPA air toxics cancer risk index	Lifetime cancer risk from inhalation of air toxics.	NA	174%
Mid (30)	Diesel particulate matter	Can cause irritation to the eyes, throat and nose, heart and lung disease, and lung cancer.	High	1409%
	Ozone	Short-term exposure can cause a variety of respiratory health effects and symptoms. Long-term exposure to ozone is linked asthma development.	High*	72%
	Asthma prevalence	Asthma causes narrowing of the airways, which makes breathing difficult and can lead to chest tightness or pain, coughing or wheezing, or shortness of breath.	NA	121%
Low (10)	Sulfur dioxide (SO2)	Short-term exposure can harm the respiratory system and make breathing difficult. High concentrations can also harm trees and plants.	Low	25%
	Nitrogen dioxide (NO2)	Nitrogen oxides can cause damage to lung tissue, breathing and respiratory problems, as well as contribute to smog and acid rain.	Low**	212%
	Carbon monoxide	Reduces the amount of oxygen that can be transported to critical organs like the heart and brain.	NA	138%

Data is from the EPA National Air Toxics Assessment, the NYC Community Air Survey, the Center for Air, Climate, and Energy Solutions, and the Centers for Disease Control.

*NYC data unit of measure is annual average; health standard is daily maximum; NYC level at ~50% of health standard suggests high risk

**EPA NAAQS estimates that 0% of the US population is exposed to levels that exceed the health standard

B. Community Engagement

As an organization, the MTA engages in various forms of outreach including regular MTA Board meetings, townhalls, press conference, forums, focus groups, charrettes with community-run organizations, and regular meetings with New York City's 59 Community Boards and local elected officials.

In 2021, the MTA issued a press release indicating that the agency was committed to electrifying the bus fleet (Press conference available <https://www.youtube.com/watch?v=b6vISmDIMWI>). This press conference and outcome are a direct result of work done over the years to partner with the public to address pollution and noise at MTA bus depots. On May 25, 2021, the MTA announced the purchase of electric buses, noting that, "In NYC, approximately 75% of MTA bus depots are located in low/moderate-income communities, and transit bus routes run disproportionately through these neighborhoods" (<https://new.mta.info/press-release/mta-announces-plans-increase-number-of-electric-buses-purchased-2021>). The transition to zero-emission buses will have a direct positive impact on neighborhoods that have historically hosted bus depots. In addition to the announcement of the bus transition, there have been a host of targeted engagement activities at each of the MTA's depots.

One example of targeted community outreach programs involved the MTA's Mother Clara Hale (MCH) Depot. The MTA held a charrette in 2010 with community groups and members to assist in developing a state-of-the-art facility that addressed health and safety concerns while prioritizing critical operational needs. The MTA worked with We Act and East Harlem community groups to develop a state-of-the-art facility. The work done at MCH set a new precedent as the nation's first LEED certified depot and informed how the agency has continued to engage with the public to spark change. MCH Depot, fully reopened in 2015, is a testament to the power of collaboration, intentional partnership and the value of embracing new technology to improve environmental conditions.

Community charrettes are now a common MTA outreach tool. At Jamaica Depot, one of the three included in this project, the MTA worked closely with community members, labor partners and local leaders to plan for a new and improved state of the art facility. Jamaica Depot is the last stop on the J train in Queens and is situated in an equity priority area that has been afflicted with underinvestment, resiliency problems and air pollution. Jamaica Depot is currently undergoing major renovations and was among the first depots identified for transition to zero-emission buses, primarily to address community health concerns and improvements needed at the facility.

The MTA's Office of System Safety and Department of Buses hosts monthly safety meetings at each depot. These meetings focus on environmental, health and safety both for the public and for MTA employees (Example Safety Meeting <https://new.mta.info/document/105881>). Community leaders and union representatives regularly attend and voice concerns at these safety meetings. Metrics based on feedback from these events are used to generate midyear Safety Goal Action Plans and System Safety Program Plans. These reports help to highlight to MTA leadership the need for facility updates and implementation of new technologies (electric buses, updates to HVAC systems and reduced reliance on fossil fuel dependent construction equipment).

Section 5: Job Quality

The MTA has apprenticeship programs for many job titles, from electricians to technicians, and will continue to use these programs to develop skills for its workforce to ensure they can adapt to changing technology. Such programs, which include partnerships and apprenticeship programs for students in underserved and underrepresented communities, prioritize career advancement for current staff and provide access to good-paying union careers.

The MTA actively works to provide equal access to procurement and contracting opportunities to businesses owned by minorities, women, and veterans with service-related disabilities. The MTA's Department of Diversity and Civil Rights administers this effort to employ approved Minority Business Enterprise (MBE), Women Business Enterprise (WBE), and Disadvantaged Business Enterprise (DBE) and Service-Disabled Veteran Owned Businesses (SDVOB) certified businesses and maintains a list of certified firms to assist potential vendors in teaming opportunities with prime contractors. In 2022, MTA paid \$1.3 billion to M/WBE, DBE, and SDVOB contractors. MTA's DBE goal for USDOT- funded projects for FY2024-2026 is 20 percent.

The MTA's Small Business Development Program (SBDP) is designed to engage and grow the New York State-certified M/WBEs, DBEs, and SDVOBs. The SBDP supports emerging contractors in order to increase the pool of diverse, qualified contractors who can compete for construction projects.

Classroom and on-the-job training and technical assistance are provided, as well as access to capital and bonding for up to \$3 million for prime contract opportunities with MTA agencies. Through 2023, 600 contracts totaling over \$600 million have been awarded to small businesses within the SBDP.

MTA recently signed the Equity in Infrastructure Pledge, to further its commitment to inclusion when awarding contracts for construction projects. The pledge affirms that the MTA will ensure participation of on at least \$1 billion of work every year, award larger contracts to small businesses, expand the pool of MW/DBE firms that the MTA works with and increase discretionary contracts for design and engineering MWBE firms by 20 percent over the next five years. (<https://new.mta.info/press-release/icymi-governor-hochul-announces-mta-signs-equity-infrastructure-project-pledge>)

MTA construction projects predominantly utilize union labor with strong labor standards and policies and pays prevailing wage for all work. Additionally, MTA and its contractors recruit in communities with upcoming projects to maximize access to job opportunities that directly benefit those communities, many of which are historically disadvantaged.

The MTA has long sought to connect those seeking pathways to middle-income job opportunities and the programs designed to get them there. Together with the Building and Construction Trades Council (BCTC) of Greater New York, MTA holds frequent jobs information events in communities where the delivery of capital projects is planned to connect residents with direct entry and early entry apprenticeship training programs, civil service job opportunities, and job development programming. The MTA and BCTC have executed successful events in 2019, 2022, and 2023, in the Bronx, East Harlem, Southeast Queens, and the Rockaways, reaching over 1,000 interested job seekers. Additionally, MTA contractors for projects in these areas have held DBE recruitment events to try to expand the pool of disadvantaged subcontractors that they have to work with in these communities.

The Bipartisan Infrastructure Law's allowance of local hiring preferences for federally funded projects allows MTA to further expand opportunities for socially and economically disadvantaged communities in the NYC region. For instance, the MTA will implement a local hiring goal at Jamaica Depot as part of this project, with a goal of 20 percent of all work hours performed on the contract.

MTA has developed successful internship programs where design and project management teams work with local colleges and universities to attract local students pursuing an education in relevant disciplines. Students receive real-world practical experience and the potential to be retained once they are ready to enter the workforce. Internship opportunities will be available on this project.

The MTA offers outstanding benefits for current employees, including competitive health care and a state pension. Training is offered through a host of forums - online, in the field and off-site. Workers are provided with Right to Know training, OSHA 30, Track Safety, HAZMAT courses and a host of other programs all free of charge. The MTA continues to improve and reduce workplace accidents, with a reduction of 234 incidents between 2022 and 2023.

Section 6: Programmatic Capability and Past Performance

A. Past Performance

As the largest transit agency in the US and an experienced steward of federal funding, MTA has the know-how and the technical, legal, and financial capacity to deliver the proposed project successfully.

Figure 3: Details on Past Federally Funded Assistance Agreements

Project title	Assistance agreement number	Federal funding agency and assistance listing number	Brief description of the agreement	Contact from organization that funded the assistance agreement	Include a discussion of whether and, if so, how the applicant was able to successfully
Purchase 53 Articulated Buses	NY-2016-046-02	FTA, U7030201 - Bus Buys	The purpose of this project is for the purchase of 53 articulated buses to be operated by MTA Bus. While some of the buses will be used for the replacement of over-aged buses, others will be utilized as part of the new SBS (Select Bus Service) program that is being rolled out across the City.	Donovan Vincent, FTA Region 2	The purchase was completed successfully, on schedule and within budget through strict adherence to MTA's procurement policies and project management procedures.
Purchase 257 Express Buses	NY-2016-046-04-02	FTA, U7030202 - Bus Buys	The purpose of this project is for the purchase of 257 45-foot diesel express buses to be operated by MTA Bus. The buses will be used for the replacement of over-aged fleet throughout the City that are beyond their useful life.	Donovan Vincent, FTA Region 2	The purchase was completed successfully, on schedule and within budget through strict adherence to MTA's procurement policies and project management procedures.
SGR Bus Purchase	NY-04-0093-01	FTA, 49 USC 5309 - Bus and Bus Facilities (FY2006 forward)	This project is for the purchase of 35 40-foot, low floor diesel buses by MTA Bus, replacement per depot as needed.	Donovan Vincent, FTA Region 2	The purchase was completed successfully, on schedule and within budget through strict adherence to MTA's procurement policies and project management procedures.
Fire Alarm System Replacement at 3 Bus Depots	NY-2016-042	FTA, 49 USC 5339 - (MAP 21) Bus and Bus Facilities Formula (FY2013 & Fwd)	NYCT will maintain a state of good repair of the fire alarm systems at three NYCT Bus Depots: Jackie Gleason, Manhattanville and Gun Hill.	Donovan Vincent, FTA Region 2	The project was completed successfully, on schedule and within budget through strict adherence to MTA's procurement policies and project management procedures.
Purchase 40 Replacement CNG Buses	NY-90-X411	FTA 49 USC 5307 - Urbanized Area Formula (CMAQ Flex)	Purchase 28 heavy-duty CNG replacement vehicles with wheelchair equipment and associated spare parts to provide the required capacity of the fixed route service.	Donovan Vincent, FTA Region 2	The purchase was completed successfully, on schedule and within budget through strict adherence to MTA's procurement policies and project management procedures.

Since FFY 2019, MTA has obligated \$28.8 billion in federal grants, including \$13.5 billion in FTA capital grants, \$15.2 billion in FTA operating assistance grants, \$45.4 million in Federal Railroad Administration (FRA) capital grants and \$133.4 million in Transit/Port Security grants through the Department of Homeland Security. Details on past performance on five federally funded assistance agreements are provided in Figure 3.

There are no outstanding legal, technical, or financial issues with the MTA, as a grantee, that would make the project high-risk to implement quickly. MTA will work with EPA to ensure timely grant obligation, and the bus purchase contract option is ready and planned for award by the 4th quarter of calendar year 2024. MTA is in compliance with all applicable civil rights requirements, including the Title VI Program and DBE Goals.

B. Reporting Requirements

For all five projects noted in Figure 3 above, required Quarterly Reports were submitted via TrAMS (FTA's grant management portal) on a timely basis, without exception, throughout each respective project duration, noting periodic updates to grant drawdown activity, schedule, cost, and scope progress.

C. Staff Expertise

The MTA was created as a public benefit corporation by New York State legislation in 1965 (the Metropolitan Transportation Authority Act, New York Public Authorities Law, Title 11, Section 1260, et seq.) and is responsible for providing transportation services within the multi-county transportation district which encompasses New York City and the surrounding counties of Nassau, Suffolk, Westchester, Rockland, and Putnam. MTA carries out these responsibilities directly and through its subsidiaries and affiliates, which are also public benefit corporations and include: New York City Transit, Long Island Rail Road; Metro-North Commuter Railroad Company; Staten Island Rapid Transit Operating Authority; Triborough Bridge and Tunnel Authority; MTA Bus Company; MTA Construction and Development Company (MTA C&D); and MTA Grand Central Madison Concourse Operating Company. The operation of the MTA is overseen by a 17-member Board of Directors. Members are nominated by the Governor and are confirmed by the New York State Senate.

MTA Headquarters provides administrative oversight and centralized financial controls. The MTA and its operating agencies are subject to annual A-133 audits and federal reviews, which verify that systems, processes, and procedures are in place to effectively manage capital projects and draw down grants in compliance with all applicable federal requirements. The MTA routinely oversees project implementation progress through regularly scheduled progress meetings and milestone progress reports, and reports to the Capital Program Committee of the MTA Board. MTA's Procurement Department is experienced in federal procurements, and scrupulous in adhering to all of the necessary regulations. All contracts are reviewed and approved by the MTA's Legal Department.

The MTA has convened a team of qualified professionals and experts to implement this project, as described in Section 3c above. Team biographies are provided as attachments to the Other Attachments Form.

Section 7: Budget

A. Budget Detail

MTA is requesting \$172.4 million in EPA CPRG funding, or 70% of the \$246.3 million total project cost to program to advance the MTA's zero-emissions bus fleet transition, a priority greenhouse gas (GHG) reduction measure in the NY-NJ Metropolitan Statistical Area (NY-NJ MSA) Preliminary Climate Action Plan (PCAP) that will significantly reduce GHG emissions. The project includes:

- Purchase of 100 40-foot battery-electric buses;
- Installation of charging infrastructure needed for these buses at three depots -- Jamaica Depot in Queens, Ulmer Park Depot in Brooklyn, and Yukon Depot in Staten Island; and
- Zero-emission workforce training and development.

MTA will contribute a \$73.9 million non-federal, locally funded share to this project that is available and will come from MTA Bonds and Cash supporting the approved 2020-24 MTA Capital Program. Prior Federal funding has not been previously sought for the buses and related infrastructure that are the subject of this application.

As the nation's largest recipient of federal public transportation funding, MTA has reliably provided local match, allowing MTA to effectively utilize and quickly spend down federal funds, while ensuring transparent reporting and determined project management. The proposed project is ready to advance.

Project Budget (see attached SF-424A form)

The bus purchase was developed through internal (MTA) and 3rd-party consultant-sourced comparisons based on recent MTA bus procurements. The charging infrastructure estimate is based on negotiated rates from design-build firms who bid on recent MTA bus equipment solicitations.

A. Other – Workforce development - Total: \$11,728,954

- a. Invest in the buildout of an MTA Zero-Emissions Center of Excellence that will foster the following activities:
 - i. Training for MTA staff as well as paid apprenticeships for local CTE (Career and Technical Education) students,
 - ii. Developing digital training materials and create maintenance and State of Good Repair framework for Zero-Emissions buses and associated infrastructure, and
 - iii. Implementing a marketing campaign on MTA's zero-emission transformation to attract students to CTE schools and technical careers.

B. Contractual – Total: \$234,579,092

- a. MTA will award a federally-compliant, 3rd party contract for the purchase of 100 40' low-floor battery-electric buses (Option to an existing contract) and, with NYPA, procure the design and installation of charging infrastructure.
- b. The new buses will be assigned to New York City Transit Bus Depots as follows:

DEPOT	# of Buses	Bus Cost per Depot	Charging Infrastructure per Depot	Total Cost per Depot
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Ulmer Park	30	\$43,233,866	\$27,139,862	\$70,373,728
Jamaica	60	\$86,467,731	\$54,279,724	\$140,747,455
Yukon	10	\$14,411,289	\$23,457,909	\$23,457,909
TOTAL	100	\$144,112,885	\$90,466,207	\$234,579,092

- c. MTA contract support costs - Department of Buses (DOB) Staff – in-house labor support, including contract administration, in-service testing, and progress inspections.
- d. Contract contingency – the project budget includes 2% contract contingency.

B. Expenditure of Awarded Funds

As the largest transit agency in the US and an experienced steward of federal funding, MTA has the know-how and the technical, legal, and financial capacity to deliver the proposed project successfully. MTA will work with EPA to ensure timely grant obligation. Since MTA is purchasing the buses through a negotiated option to an existing contract, a new procurement is not needed, saving time. MTA has an agreement in place with NYPA to serve as project manager for implementation of the new depot infrastructure. Schematic designs are established, and NYPA will award the work to a pre-qualified federally-procured design build contractor. This work will commence shortly after funding is in place.

C. Reasonableness of Costs

As discussed in detail in Section 7a and the attached Budget Narrative, the proposed project is requesting funding for two contractual cost items (bus purchases and charging infrastructure installation at three depots) and one direct cost item for workforce development (cost category “Other”). All of these expenditures are required to implement the proposed GHG measure of electrifying 100 diesel transit buses at three depots; to successfully implement this measure, new battery-electric buses must be purchased, and charging infrastructure and sufficient workforce readiness must also be provided for in order to effectively maintain and operate those buses over their lifetime.

The bus purchase costs are actuals, based on the negotiated option. Two percent (2%) contingency is included. The charging infrastructure contractual cost estimates were based on negotiated rates from design-build firms who bid on recent MTA bus equipment solicitations.

The costs for workforce development training are reasonable and based on in-house estimates of similar training programs that have been found to be sufficient for worker upskilling.

See Section 7a Budget Detail for more information.