U.S. Department of Environmental Protection (EPA)

Climate Pollution Reduction Grants Program: Implementation Grants General Competition

Harnessing Transportation Alternatives to Decarbonize Travel Across Greater Philadelphia:

Work Plan:

City of Philadelphia

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Workplan

Section 1: Overall Project Summary and Approach

Description of GHG Reduction Measures

This individual application will support the implementation of the five programs proposed by SEPTA and The City of Philadelphia Mayor's Office of Transportation, Infrastructure, and Sustainability (OTIS). Together, these programs decarbonize areas within Philadelphia Metropolitan Area by enhancing public transit service frequency and quality, decarbonizing commuter and freight transportation, expanding micromobility and e-micromobility options, as well as supporting charging infrastructure for alternative fuel vehicles. The programs are listed as follows:

- SEPTA measure 1: Freight-Commuter Rail Separation Program
- SEPTA measure 2: Silverliner VI Rail Car Procurement and Facility Improvement Program
- City of Philadelphia measure 1: Indego Bike Share Program
- City of Philadelphia measure 2: Income-based E-Bike Voucher Program
- City of Philadelphia measure 3: Electric Vehicle Charger Installation and Workforce Development Program

SEPTA and the City of Philadelphia will be responsible for the planning, design, and execution of their respective measures included in this application for EPA's Climate Pollution Reduction Grants (CPRG).

Introduction to SEPTA Measures

SEPTA has undertaken major planning efforts to reorient public transit service for the Philadelphia region. The Reimagining Regional Rail plan, to be published in spring 2024, is poised to dramatically overhaul the region's transit landscape.[1] To modernize, expand, and improve the Regional Rail network, the plan seeks to introduce frequent commuter rail services in 15-to-20-minute intervals on key lines, increase frequencies during off-peak hours, and establish a fare structure that is both more equitable and better integrated with the existing bus and SEPTA Metro systems. This plan is designed to make public transit a more appealing option than personal vehicle use, thereby reducing GHG emissions in the transportation sector and mitigating climate change over the next 30 years. The two measures included in this application from the broader plan demonstrate the priority of GHG reduction efforts in the Priority Climate Action Plan (PCAP) developed by Delaware Valley Planning Commission (DVRPC).

SEPTA measure 1: Freight-Commuter Rail Separation

The Freight-Commuter Rail Separation Program aims to facilitate more efficient freight logistic movements and higher frequency commuter rail service by separating the freight and commuter train movement along the Airport Line and Norristown Line Corridor. The Airport and Norristown Lines connect residents and visitors from Philadelphia International Airport, northwest Philadelphia, and Montgomery County to popular city and regional destinations, supporting over 4.5 million, or 13 percent of total, regional rail ridership annually.[2] The routes provide service from 5am to 12am.

[1] SEPTA Department of Strategy & Analysis, Reimagining Regional Rail Draft Final Report (August 7th, 2023) (unpublished report, on file with SEPTA Planning Division). The current planning effort can be found on SEPTA Planning website. A document that introduces the Reimagine Regional Rail Plan is the "SEPTA Forward – Building a Lifestyle Network". Access through https://planning.septa.org/wp-content/uploads/2022/03/SEPTA-Forward_LifestyleNetwork.pdf

[2] Estimated based on 2019 regional rail ridership counts by SEPTA.

Freight rail operated by Conrail, CSX, and Norfolk Southern Railway currently share tracks with the Airport and Norristown commuter lines posing logistical challenges to both freight and commuter services and limiting SEPTA's ability to increase commuter rail frequencies. The existing freight movements by Conrail and CSX occupies between 24 and 28 minutes of track time between 90th Street and 60th Street crossing over both track 1 and track 2. Currently, these freight movements share tracks with SEPTA's Airport Line that services commuters at 30-minute intervals. Under current operating conditions, this arrangement between passenger and freight traffic creates conflicts only if trains are off schedule but prevents future increases in service frequency for both passenger and freight service. Norfolk Southern Railway shares track with the Norristown Line. Freight traffic is mainly off-peak but has crept into the commuter rail schedule during the morning rush hour due to the increasing freight demand in the northeastern corridor.

These capacity conflicts of these shared tracks create a challenge to realize the 15-to-20-minute interval service frequency envisioned by the Reimagine Regional Rail strategic initiative for the Airport Line and the Norristown Line. The proposed measure to separate the tracks is an essential first step to enable higher frequency service. In addition, as freight demand in the northeastern corridor grows, freight operators will benefit from the increased freight movement capacity following the rail track separation. Furthermore, additional capacity for freight rail presents a lower emissions alternative to increased truck freight activity to meet growing demand in the northeast region.

The Freight-Commuter Rail Separation program is a **GHG emission reduction measure** that improves public transit frequency, quality, and reliability, ultimately reducing transit travel times for commuters, as well as expands the capacity for freight movement by rail. This program aligns with PCAP "Measure 5: Actions to Expand and Improve Transit" by increasing ridership as a result of improved public transit service and reducing the miles traveled of single occupancy vehicles. Additional emission benefits will be gained through the displacement of truck freight miles traveled with rail freight transportation: rail freight reduces GHG emissions by up to 75% on average relative to trucking.[3] Overall, this program generates GHG emission reductions that **help the CPRG program** to achieve its goal of a significant cumulative GHG reduction by 2050. The measure complements SEPTA's Capital Improvement Program funding to realize the Reimagine Regional Rail strategic initiative's ambition to optimize GHG reductions and community benefits and can demonstrate the benefits of increased commuter rail frequency, enhanced freight capacity and sustainability to the regional economy.

The **key metrics** evaluated in this measure include:

- The effect of mode shifts due to automobile trips replaced by regional rail trips
- Reduced roadway congestion due to less automobile trips
- Improved land use efficiency due to dense, multiuse development around transit service
- Increase in rail transit ridership due to more frequent and attractive transit service
- Savings in commute time
- Lower emission in freight transportation

[3] Freight Rail and Climate Change. Association of American Railroads, 2023. Access through https://www.aar.org/wp-content/uploads/2023/06/AAR-Climate-Change-Fact-Sheet.pdf

- Community benefits, including low-income and disadvantaged communities (LiDAC), from improved commuter rail service and freight transportation and resulting GHG emission reduction

The **schedule and milestones for** this measure come from Phase 1 (2036-2045) and Phase 3 (2045-2050) of SEPTA's Reimagine Regional Rail strategic initiative, which overlaps mostly with the EPA performance period 2 (2025-2050). Phase 1 focuses on implementing a 20-minute service for the Silver Line 1 (S1), which will cover the existing service areas by the Norristown Line and Airport Line. Phase 3 further increases the service frequency to every 15 minutes.

SEPTA measure 2: Silverliner VI Rail Car Procurement and Facility Improvement Program

The Silverliner VI Rail Car Procurement and Facility Improvement Program aims to procure new Silverliner VI rail cars to replace the 230 Silverliner IV rail cars that were delivered from 1974 to 1977 and have been in service for significantly longer than the forty-year useful life prescribed for such vehicles Today, 83 percent of SEPTA's energy consumption is related to its vehicle operations.[4] The Silverliner IV rail cars have become increasingly costly to operate and maintain due to decreasing energy efficiency, frequent failures, and difficult repair needs, rendering the Regional Rail service less efficient for SEPTA and less reliable for commuters. One of SEPTA's major energy-efficiency initiatives, the Silverliner VI rail car, is a higher-efficiency model. It is lighter yet steadier than prior models, built with energy-efficiency design elements such as regenerative braking, AC Propulsion, and an energy consumption measurement system. Additionally, this new model improves the rider experience by providing live trip information in the Commuter Information Systems, wider aisles and entrances to facilitate rider movement on and off the train, and improved comfort amenities.

The new Silverliner VI rail cars will require modernized facilities for storage and maintenance. SEPTA's facility improvement program will upgrade existing yards and construct new ones. This program includes a range of activities such as acquiring land, building new structures, rebuilding structures in place, and creating full crew reporting facilities. Potential projects include construction of new railyards in Delaware, at either Wilmington or Newark, and Bucks County at either Glenside or Warminster as well as rebuilding or expanding existing railyards, such as Trenton and Wayne Junction in North Philadelphia, to increase capacity, improve operations and add crew facilities.

The Silverliner VI Rail Car Procurement and Facility Improvement program is **a GHG emission reduction measure** to improve public transit service quality. By modernizing the existing rolling stock and ensuring associated facility upgrades, this program will reduce GHG emissions directly through reduced energy consumption on a per mile basis, increase transit service and ridership through enhanced vehicle reliability, and provide a higher quality travel experience for riders. If not replaced, the existing rolling stock will generate increased GHG emissions as vehicle energy efficiency decreases over time and require more frequent and costly repairs that increases cost and reduces service reliability. This measure aligns with PCAP "Measure 5: Actions to Expand and Improve Transit", with new rail cars improving reliability and reducing delays from aging equipment and expanding public transit's usefulness across the city and region. Overall, the measure generates GHG emission reductions that **help the CPRG program** to achieve its goal in significant cumulative GHG reduction by 2050; complements SEPTA's restricted budget to

[4] SEP-TAINABLE (Annual Report). SEPTA, April 2020. Access through https://planning.septa.org/wp-content/uploads/2022/07/SEP-tainable_AR_2020-Final-4-22.pdf

realize the Reimagine Regional Rail strategic initiative's ambition to optimize GHG reductions and community benefits; and demonstrates that more reliable rail cars make public transit service more attractive for commuters and more energy efficient to operate.

The **key metrics** evaluated in this measure include:

- Increased energy efficiency in operating rail cars
- Reduced maintenance needs resulting in more reliable service
- The effect of mode shifts due to automobile trips replaced by regional rail trips
- Reduced car congestion due to fewer automobile trips
- Improved land use efficiency due to compact development around transit service
- Increase in rail transit ridership due to more attractive transit service
- Savings in commute time
- Community benefits, including low-income and disadvantaged communities (LiDAC), from improved commuter rail service and freight transportation and resulting GHG emission reduction

The schedule and milestones for the replacement of Silverliner IV rail cars are between 2024 and 2034, see **Table 1**. The procurement plan rolls out the balance of the 230-car replacements at a similar pace beyond 2034. For the facility improvement, the timeline is 2030-2035 for design and 2040 for completion.

Table 1. Program Milestones and Date for SEPTA Silverliner VI Rail Car Procurement.

Item	Proposed Project Milestones	Milestone Date
1	Technical Specifications Completed	4/1/2024
2	Carbuilder Request for Proposal Issued	9/9/2024
3	Issue Notice to Proceed	6/30/2025
4	Conceptual Design Review Completed	11/30/2025
5	Preliminary Design Review Completed	4/2/2026
6	Final Design Review Completed	10/31/2026
7	First Vehicle Shell Accepted	12/31/2027
8	Major Systems First Article Inspections Completed	12/31/2027
9	Pilot Vehicles Delivered	12/30/2028
10	Pilot Vehicles Accepted	8/30/2029
11	First Production Vehicle Accepted	10/31/2029
12	Last Vehicle Delivered	10/31/2031
13	Car-builder Contract Complete	10/31/2034
Note: fleet quantity is 100 cars, including 50 married pairs. Pilot vehicles are 3 married pairs. Production vehicle delivery is in the pace of 2 married pairs per month.		

Source: from SEPTA, 2024.

City of Philadelphia Measures

The City of Philadelphia Mayor's Office of Transportation, Infrastructure, and Sustainability (OTIS) is committed to providing affordable, green travel options to historically disadvantaged communities and heavily traveled corridors. Demonstrating the City's commitment to reducing GHG emissions as suggested in DVRPC's PCAP, the City has developed three programs: one supporting Indego, Philadelphia's official bike share program; a second supporting an Income-based E-bike Voucher Program, and a third to expand the availability and accessibility of electric vehicle chargers.

City of Philadelphia measure 1: Indego Bike Share Program

Indego Bike share has been in operation since 2015, offering over 2,000 self-service bicycles at over 200 locations in the city.[5] Riders used Indego bikes for more than one million trips in 2023 replacing an estimated 200,000 to 350,000 automobile trips through mode shift.[6] The service provides a sustainable, affordable option for short-distance travel throughout the city.

This program aims to expand bike share service and facilitate longer and more comfortable bike trips by expanding and electrifying bikeshare stations, as well as adding more electric bikes to the current bike stock that is a mix of regular and electric bikes. The expansion phase will purchase and deploy up to 75 bikeshare stations and 750 electric bikes, while the electrification phase will procure up to 40 charging bikeshare stations and 400 electric bikes.

The Indego Bike Share program is **a GHG emission reduction measure** that will expand the use of bike and e-bike share programs and correspondingly reduce the need for auto trips. The increased availability of bikes and e-bikes, and bike share stations will position cycling as a green, convenient, and affordable option for more people, especially those in LiDAC communities and along heavily trafficked commercial corridors. This program aligns with the PCAP "Measure 6: Actions to Implement Bicycle, Pedestrian, and Active Transportation Improvements", which asks for investment in bike share expansion and electrification to support active transportation throughout the city. Overall, the measure generates GHG emission reductions that **help the CPRG program** to achieve its goal in significant cumulative GHG reduction by 2030 and beyond. It provides low-cost travel options at scale, improves quality of life for Philadelphians, provides access to areas of opportunity for people in LiDAC, and demonstrates that making biking a more readily available option can encourage more people to replace auto trips with bike travel.

The **key metrics** evaluated in this measure include:

- Number of bikes and e-bikes added
- Number of bike station installed
- Increased bike hauling trip energy efficiency due to station expansion
- The effect of mode shifts due to automobile trips replaced by bike trips
- Increase in bike ridership
- Emission savings due to low-emission fuel consumed by e-bike relative to car
- Community benefits, including low-income and disadvantaged (LiDAC) communities, from the bike share program

The measure has two phases. The expansion phase will take place over 12 months (January 2025 to December 2025). The electrification phase will be implemented shortly thereafter for 16 months (January 2027 to April 2028).

City of Philadelphia measure 2: Income-based E-Bike Voucher Program

The Income-based E-Bike Voucher program allocates 2,040 vouchers to eligible Philadelphia residents to purchase e-bikes at an affordable out of pocket cost while creating workforce development opportunities

[5] Indego website. Access through https://www.rideindego.com/about/
[6] From Indego.

for small businesses to sell e-bikes at scale. Currently, 54 percent of vehicle trips in Philadelphia are under five miles, indicating the potential to replace many vehicle trips with e-bikes.[7] However, upfront costs make an e-bike purchase out of reach for many low- and moderate-income residents in Philadelphia. Working with local bike shops, especially ones that have not obtained the capacity to sell e-bikes, creates business and workforce development opportunities related to e-bikes for the shop owners.

The program is a GHG emission reduction measure to facilitate more frequent and longer bike trips. The voucher program will incentivize e-bike ownership in low- and moderate-income families, supporting an affordable and low-emission travel mode while improving opportunities for small businesses. This program aligns with the PCAP "Measure 6: Actions to Implement Bicycle, Pedestrian, and Active Transportation Improvements", with the e-bike purchase incentive program supporting e-bike ownership that increases active and low-emissions transportation daily. Overall, the measure generates GHG emission reductions that **help the CPRG program** to achieve its goal of significant cumulative GHG reduction by 2030; provides low-cost travel options at scale; improves the quality of life and opportunities to access resources for people in LiDAC; and demonstrates that an e-bike incentive program can make e-bikes more attainable for low- and moderate-income families, thus replacing partially automobile trips that are of higher cost and generate more emissions.

The **key metrics** evaluated in this measure include:

- Number of e-bike purchases supported by the voucher program
- The effect of mode shifts due to automobile trips replaced by bike trips
- Increase in bike and e-bike usage
- Emission savings due to lower-emission fuel consumed by bike over cars
- Community benefits, including low-income and disadvantaged (LiDAC) communities, from the e-bike voucher

The program is scheduled to be implemented between August 2024 and June 2025. See detailed version in **Table 2.**

Table 2 Program Schedule for Income-based E-Bike Voucher Program

Activity	August 2024- October 2024	October 2024- June 2024	June 2024- January 2025	January 2025- June 2025
Engagement -Develop list of bike shops -Co-create workforce development plan	 **---X** **---------X**			
Admin -Hire or allocate staff for program admin -Develop lottery application -Create reimbursement system for bike shops -Implement workforce and safety program	 **----------** **------**	 **------X** **----------X** **----------X** **------X**		
Program Implementation -Open voucher application			 **X**	

[7] The Rocky Mountain Institute, 2023. This E-bike Impact Calculator Can Help Cities Accelerate E-Bike Adoption. Access through https://rmi.org/this-e-bike-impact-calculator-can-help-cities-accelerate-e-bike-adoption/

- Reimburse bike shops as vouchers are used			----------	----------X
Program Analysis -Data analysis on voucher implementation -Engagement with bike shops and voucher recipients				----------X ----------X
Program redesign and implementation -Implement changes based on the first round of vouchers -Release second round of vouchers				---X X

Source: from City of Philadelphia, 2024.

City of Philadelphia measure 3: Electric Vehicle Charger Installation and Workforce Development Program

The Electric Vehicle ("EV") Charger Installation and Workforce Development program initiates Philadelphia's alternative fueling infrastructure network by installing, operating, and maintaining 75 publicly accessible electric vehicle chargers (EV chargers) including 25 in municipal parking lots through Philadelphia Parking Authorities. Many existing EV chargers are located in municipal department garages and fleet shops, both of which are not accessible to private EV owners.

The Electric Vehicle Charger Installation and Workforce Development program is **a GHG emission reduction measure** to install EV chargers for alternative fuel vehicles in publicly accessible locations. This is an essential step in building the alternative fueling network to incentivize more EV ownership, replacing higher emission gasoline-fueled vehicles. This program aligns with the PCAP "Measure 1: Actions to Support Decarbonization of Local Government Operations," as well as PCAP "Measure 4: Actions to Transition Light Duty Vehicles to Low- or No-Carbon Emission Vehicles." Both PCAP measures highlight the importance of EV charger's availability on public properties to encourage alternative fuel vehicle adoptions. Overall, the measure generates GHG emission reductions that **help the CPRG program** to achieve its goal in significant cumulative GHG reduction by 2030 and beyond. It provides improved access to EV chargers as a community benefit for Philadelphians, complements existing efforts in workforce development for clean energy jobs, facilitates the transition of the transportation sector towards lower-emission travel technology; and demonstrates that investing in EV chargers can encourage EV ownership over conventional gas car ownership, contributing to decarbonization goals.

The **key metrics** evaluated in this measure include:

- Number of publicly accessible chargers by station type
- Uptime hours for EV charging stations
- Number of maintenance and repair workers trained
- Emission savings due to lower-emission fuel consumed by the EV cars over conventional cars
- Community benefits, including low-income and disadvantaged (LiDAC) communities, from the improved access to EV chargers

The program is scheduled to be completed between October 2024 and 2028. See detailed schedules in **Table 3** below**.**

Table 3 Program Schedule for City of Philadelphia's Electric Vehicle Charger Installation and Workforce Development Program

Tasks	Responsible Team Members	Timeline
Project Award NOFO Award Received	Project Owner (PPA)	First week of Oct-2024
Project Planning Site Due Diligence Preliminary Design coordination	Project Owner (PPA) Engineer of Record (TBD)	Oct-2024
Design and Permitting NEPA Coordination Final Design Procurement	Project Owner (PPA) EVSE Supplier Charging Network Provider Engineer of Record (TBD)	Nov-2024 to Jun-2025
Utility Coordination Preliminary and Final Utility Design	Project Owner (PPA) Utility Provider EVSE Supplier Charging Network Provider Engineer of Record (TBD)	Oct-2024 to Mar-2025
Site Preparation & Permitting	General Sub-Contractor	Jul-2025 to Sep-2025
Construction Site Energization Site Commissioning	Electrical Sub-Contractor General Sub-Contractor EVSE Supplier Charging Network Provider	Oct-2025 to Mar-2026
Operations and Maintenance	Project Owner (PPA) Operator Maintainer	CY 2026 to CY 2028

Source: from City of Philadelphia, 2024. PPA stands for "Philadelphia Parking Authority".

Demonstration of Funding Need

Both SEPTA and the City of Philadelphia have applied for several federal and non-federal funding opportunities. So far, these GHG emissions reduction measures programs have not fit precisely within the guidelines for all opportunities. These programs deserve support, and SEPTA is determined to bring together the right coalition of funders.

SEPTA has rigorously pursued all available funding avenues with limited success:

- Our December 2022 application for the **Federal Rail Administration's CRISI program** did not result in an award for freight separation.
- SEPTA's projects do not meet the eligibility criteria to apply independently for the **U.S. DOT MEGA program**.
- The **Federal Transit Administration's RVR grant program** is unlikely to fund SEPTA again soon, as recent awards have been allocated for necessary replacements of a different fleet.

- Available federal and state formula funds are already earmarked for critical state of good repair needs and strategic initiatives, especially post-COVID-19 adaptations, leaving minimal funding for new projects.

City of Philadelphia: The city is actively applying for several GHG reduction programs in addition to this application:

- Submissions under the Inflation Reduction Act aim for significant funding for clean community initiatives and solar energy investment.
- Awaiting results from applications for implementation grants targeting climate pollution reduction.
- Recent awards from programs like the Bipartisan Infrastructure Law affirm the city's ongoing commitment to sustainability and green infrastructure.

Additionally, the City of Philadelphia has successfully applied for funding dedicated to the Indego Bike Share Program. The City received a FEMA Congestion Mitigation & Air Quality (CMAQ) grant to support bike share expansion. The City also receives funding from our bikeshare concessionaire, Bicycle Transit Systems, and a grant from People for Bikes and the Better Bike Share Partnership to conduct community engagement work around expansion. These efforts, however, are insufficient to meet the scale of our ambitious GHG reduction and transportation equity goals.

Transformative Impact

The proposed GHG emission reduction measures above are transformative opportunities that can lead to additional GHG reduction. SEPTA's anticipated GHG reductions through these proposed programs is largely driven by land use efficiency and an anticipated modal shift to using train travel over private vehicles. The provision of high quality, efficient public transit can encourage more compact urban and suburban development, which leads to more walkable and bikeable neighborhoods and corridors. As transit service becomes more attractive through the frequent service proposed by SEPTA, more people may be willing to take transit for trips of all type, and greater opportunities will exist to reduce the number of vehicles owner per household. This may create additional auto trip reductions and further GHG emission reductions. Increased transit frequencies also increase access to employment and educational opportunities for low- and moderate-income residents. This impact will be magnified as some households will choose to own fewer cars, which will further reduce the number of auto trips than otherwise would have been generated.

The City of Philadelphia's e-mobility and e-micromobility options will increase the attractiveness of dense, low GHG producing neighborhoods. By encouraging more people, especially those in historically disadvantaged communities and high traffic commercial corridors, to use e-bikes, the City is promoting a green alternative mode for short city trips. Additionally, the electric vehicle charger installation will promote more electric vehicle ownership over traditional gas vehicle ownership, as it provides more accessible charging infrastructure to support electric car owners for their daily needs. Taken together, the City's programs will foster additional auto trip savings, reducing VMT and GHG emissions.

Section 2: Impact of GHG Reduction Measures

The total GHG emission reduction of the five proposed measures, in CO2-equivalence, is 47,431 metric tons for Performance Period 1 (2025-2030), and 650,437 metric tons for Performance Period 2 (2025-2050). The CO2-e considers CO2, CH2, and N2O for SEPTA's Freight-Commuter Separation and Silverliner VI rail car procurement programs, while only CO2-e is analyzed in City of Philadelphia's programs through various existing tools that adopted CO2-e as a part of the assumption. Since the majority of GHG reduction impact happens beyond 2030 (largely driven by SEPTA's programs), the cost effectiveness in Period 2 ($308 per metric ton reduced) is significantly better than cost effectiveness in Period 1 ($4,228 per metric ton reduced). Importantly, the capital investments and procurements that take place in Period 1 are essential to accelerating the major GHG reductions that take place across Period 2 and beyond.

Magnitude of GHG Reductions from 2025 through 2030

The direct emission reduction leveraging EPA CPRG grant funding is 47,431 metric tons for Period 1 (2025-2030). This encompasses 661 metric tons from the Silverliner VI Rail Car Procurement and Facility Improvement program by SEPTA, and 46,770 metric tons for all City of Philadelphia programs, which includes 1,726 metric tons from the Indego bike share program, 7,800 metric tons from income-based bike voucher program, and 37,244 from the Electric Vehicle Charger Installation and Workforce Development Program. Emissions reductions are primarily from alternative fuels, followed by the mode shift effect from replacing car trips with bike trips. Higher capacity bike stations will also allow for more efficient truck operation on a per bike pick-up basis.

Magnitude of GHG Reductions from 2025 through 2050

The direct emission reduction from leveraging EPA CPRG grant funding is 650,437 metric tons for Period 2 (2025-2050). This encompasses a total of 524,265 metric tons for both SEPTA programs: 209,462 metric tons from the Freight-Commuter Rail Separation program and 314,803 metric tons from the Silverliner VI Rail Car Procurement program. The City of Philadelphia programs reduce direct emissions by 126,173 metric tons: 6,760 metric tons from the Indego Bike Share program, 13,000 metric tons from the Income-Based E-Bike Voucher Program, and 106,413 from the Electric Vehicle Charger Installation and Workforce Development Program. To investigate the impact on a per new rider basis, this emission calculation means that every new bike share trip represents 0.3 pound of CO2-e emission reduction, while every new transit rider boarding Silver Line 1 would save 41.6 pounds. E-bike and EV ownership make these alternative-fuel-powered mobility option more emission saving. On an annual basis, for every new e-bike adopted rather than gas car, 1,404.5 pounds of CO2-e is avoided; and for every new EV purchased over gas car, 3,493.7 pounds of CO2-e is saved. Overall, the largest emissions reductions come from land-use efficiency improvement, followed by mode shift effects and vehicle energy efficiency gains. See **Table 5** for impacts details.

Table 5. GHG Reductions in CO2-equivalent by program and EPA Performance Period (metric tons)

Applicant	Program	Period 1	Period 2
SEPTA	Freight-Commuter Rail Separation	-	209,462
	Silverliner VI Procurement	661	314,803
	Rail Car Facility Improvement	-	-
	Subtotal	**661**	**524,265**
City of Philadelphia	Indego Bike Share Program	1,726	6,760
	E-Bike Rebate Program	7,800	13,000

	Electric Vehicle Charger Installation and Workforce Development Program	37,244	106,413
	Subtotal	**46,770**	**126,173**
	Total	**47,431**	**650,437**

Source: SEPTA, City of Philadelphia, ESI, 2024.

Cost Effectiveness of GHG Reductions

Applying the same total grant amount over different performance periods, the direct GHG cost effectiveness is calculated at $4,228.14 per metric ton reduced for Period 1 (2025-2030), and ($308.32 per metric ton reduced for Period 2 (2025-2050). The cost effectiveness significantly improves for Period 2, as most of SEPTA's program output and outcomes are expected to happen beyond the first five years due to the upfront time periods required for vehicle procurement and freight separation construction. This activity during Period 1 is needed to generate significant GHG reductions in Period 2 (and beyond) through enhanced rail service.

Several factors influence the cost-effectiveness of the investment in GHG emission reduction, ranging from sector-specific dynamics to socio-economic considerations. In general, SEPTA's investments improve transit service by taking better advantage of existing underutilized rail right of way, rather than building on new right of way. This approach to service enhancement is generally more cost-effective.

Several factors play crucial roles influence the cost-effectiveness of the investment in GHG emission reduction, ranging from sector-specific dynamics to socio-economic considerations. In general, SEPTA's investments improve transit service by taking better advantage of existing underutilized rail right of way, rather than building on new right of way. This approach to service enhancement is generally more cost-effective.

Vehicle efficiency, modal shift, congestion reductions, and land use planning are the main factors that contribute to emission reductions through transportation improvements anticipated for the projects in this application. These benefits will evolve as travel behavior and residential and employment patterns adapt to energy efficiency improvements from new fuel technology and new mobility options. The availability of charging devices at home, and the advancement in electricity distribution in the grid will promote additional GHG emission reduction. In general, the use of public land for EV charger locations can maximize the number of potential users with access, which is important in an urban setting where many residents do not have privately owned infrastructure (such as a garage) suitable for EV charging.

The close collaboration of authorities, communities and stakeholders could also accelerate the rate of GHG emission reduction. The City of Philadelphia's programs will result in GHG reductions effect sooner than the SEPTA programs due to their shorter implementation period and community engagement strategies. While SEPTA is seeking multiple funding sources from authorities to realize its Reimagine Regional Rail study, the implementation of the freight rail separation, rail car procurement, and facility improvement will be the first steps. These programs can create momentum to accelerate further infrastructure improvements producing benefits for current transit riders and attracting more riders.

Prevailing costs for key project inputs will impact the cost-effectiveness of the program as implemented. Factors like labor costs, resource availability, technology advancement, and contract management could affect the cost and affordability of the proposed programs. The Indego bike share and electric vehicle

charger installation and workforce development programs rely primarily on publicly controlled land, meaning that the fluctuation of the cost will be in material, labor, and training. The rail car procurement and facility improvement cost could be affected by inflation and potentially by contract management strategies. The freight-commuter rail program is subjected to the same factors. The timeline of implementation could affect both commuters and businesses. While the train frequency improvement relies heavily on the separation to improve the experience for commuters, the growing local economy can also benefit from having more freight rail capacity to support logistics and sustainability goals for local businesses.

Documentation of GHG Reduction Assumptions

Documentation of GHG reduction assumptions is included as a part of the technical appendix.

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

The five measures proposed by SEPTA and the City of Philadelphia generate significant benefits and GHG emission reductions. As recommended in EPA's FY 2022-2026 Strategic Plan to "Tackle the Climate Crisis" and "Reduce Emissions that Cause Climate Change," the measures have shown a strong synergy to decarbonize the intracity and regional travel in Philadelphia MSA. Co-pollutions, such as CAPs (ozone, carbon monoxide, particulate matter, lead, nitrogen dioxide, sulfur dioxide), are not reported in the GHG reduction modeling process however are generally reduced as the system operations become more efficient and vehicular traffic are avoided.

SEPTA measure 1: Freight-Commuter Rail Separation

This measure will create separate rail tracks along the Airport and Norristown Line corridor to allow higher frequency commuter rail service and uninterrupted freight rail movement. The Airport and Norristown Line will be combined and named Silver Line 1 (S1) terminating at with two ends in the Airport terminals and the Norristown transit center. Service will be offered every 20 minutes interval service by 2036 and every 15 minutes interval service by 2046. The freight rail operation will become more efficient due to fewer unplanned delays and congestion on the route, providing attractive freight movement alternatives to freight truck. The project is estimated to shift 108 million truck miles to rail service annually. The estimated truck miles replaced by freight rail is 108 million miles per year.

The GHG emission reduction outcome associated with this measure is zero CO2-e metric tons for Period 1, and 209,462 CO2-e metric tons accumulatively for Period 2. Although there are no GHG emissions reductions in Period 1, the steps taken during these first five years are critical for accelerating and growing the significant decarbonization gains realized in Period 2. The largest GHG reduction effects come from the land use effects associated with mode shifts, as well as the net effects of reduced emissions from the replacement of truck freight with rail freight.

The proposed performance metrics for this measure are:

- The effect of mode shifts due to automobile trips replaced by regional rail trips
- Reduced car congestion due to less automobile trips
- Improved land use efficiency due to compact development around transit service
- Increase in rail transit ridership due to more frequent and attractive transit service
- Savings in commute time
- Lower emission in freight transportation

- Community benefits, including low-income and disadvantaged communities (LiDAC), from improved commuter rail service and freight transportation and resulting GHG emission reduction

SEPTA measure 2: Silverliner VI Rail Car Procurement and Facility Improvement Program

This measure will replace the outdated Silverliner IV rolling stock that came into service from 1974 to 1977 with new more efficient and more reliable vehicles. These enhancements will increase the energy efficiency of each vehicle mile across the rail system. Replacement of the aging fleet is also essential to SEPTA's plans to implement and maintain enhanced service frequencies.

The GHG emission reduction outcome associated with this measure is 661 CO2-e metric tons accumulatively for Period 1, as vehicles begin to come into service in 2029, and 314,803 CO2-e metric tons accumulatively for Period 2. The initiation of vehicle procurement and delivery in Period 1 is crucial for accelerating and growing the decarbonization gains realized in Period 2. The largest GHG reduction effects come from the land use effects associated with mode shifts, the direct emissions reductions from mode shifts, and the operating gains from the enhanced energy efficiency of the new vehicles.

The proposed performance metrics for this measure are:

- Increased energy efficiency in operating rail cars
- Reduced maintenance needs resulting in more reliable service
- The effect of mode shifts due to automobile trips replaced by regional rail trips
- Reduced car congestion due to fewer automobile trips
- Improved land use efficiency due to compact development around transit service
- Increase in rail transit ridership due to more attractive transit service
- Savings in commute time
- Community benefits, including low-income and disadvantaged communities (LiDAC), from improved commuter rail service and freight transportation and resulting GHG emission reduction

City of Philadelphia measure 1: Indego Bike Share Program

This measure will expand the availability of bikes and e-bikes into additional Philadelphia neighborhoods, increasing the utilization of this low-emissions and low-cost mobility option. The GHG emission reduction outcome associated with this measure is 288 CO2-e metric tons accumulatively for Period 1 and 1,726 CO2-e metric tons accumulatively for Period 2. GHG reduction effects come primarily from the mode shift benefits of replacing auto trips with bike trips.

The proposed performance metrics for this measure are:

- Number of bikes and e-bikes added
- Number of bike station installed
- Increased bike hauling trip energy efficiency due to station expansion
- The effect of mode shifts due to automobile trips replaced by bike trips
- Increase in bike ridership
- Emission savings due to low-emission fuel consumed by e-bike relative to car
- Community benefits, including low-income and disadvantaged (LiDAC) communities, from the bike share program

City of Philadelphia measure 2: Income-based E-Bike Voucher Program

This measure will enhance the ability of income-qualifying households to purchase e-bikes, reducing their net transportation costs and increasing the utilization of this low-emissions mobility option. The GHG emission

reduction outcome associated with this measure is 1,300 CO2-e metric tons accumulatively for Period 1 and 7,800 CO2-e metric tons accumulatively for Period 2. GHG reduction effects come from the mode shift benefits of replacing auto trips with bike trips.

The proposed performance metrics for this measure are:

- Number of e-bike purchases supported by the voucher program
- The effect of mode shifts due to automobile trips replaced by bike trips
- Increase in bike and e-bike usage
- Emission savings due to lower-emission fuel consumed by bike over cars
- Community benefits, including low-income and disadvantaged (LiDAC) communities, from the e-bike voucher

City of Philadelphia measure 3: Electric Vehicle Charger Installation and Workforce Development Program

This measure will enhance the utilization of electric vehicles by expanding access to shared electric vehicle charging sites located on city-owned property, accelerating the transition of private auto usage to a lower emissions mode relative to gasoline fueled vehicles. The GHG emission reduction outcome associated with this measure is 6,207 CO2-e metric tons accumulatively for Period 1 and 37,244 CO2-e metric tons accumulatively for Period 2. GHG reduction effects come from the mode shift benefits of replacing vehicle miles from gasoline fueled vehicles with miles from electric vehicles.

The proposed performance metrics for this measure are:

- Number of publicly accessible chargers by station type
- Uptime hours for EV charging stations
- Number of maintenance and repair workers trained
- Emission savings due to lower-emission fuel consumed by the EV cars over conventional cars
- Community benefits, including low-income and disadvantaged (LiDAC) communities, from the improved access to EV chargers

Table 6. GHG reductions in CO2-equivalent by program, EPA Performance Period, in average annual and cumulative format (metric tons)

			Period 1		Period 2	
Organization	**Project**	**Credit/Debit Type**	**Annual Average**	**Sum**	**Annual Average**	**Sum**
SEPTA	Freight-Commuter Rail Separation	Mode Shift Credit	-	-	1,172	30,474
		Congestion Reduction Credit	-	-	85	2,221
		Land Use Effect Credit	-	-	3,665	95,277
		Transit Operations Debit	-	-	(301)	(7,831)
		Freight Rail Operations Credit	-	-	179	4,661
		Freight Mode Shift Credit	-	-	6,569	170,782
		Freight Mode Shift Debit	-	-	(3,312)	(86,123)
		Total	**-**	**-**	**8,056**	**209,462**
	Silverliner VI Procurement and Rail Car Facility Improvement	Mode Shift Credit	-	-	2,820	73,314
		Congestion Reduction Credit	-	-	206	5,344
		Land Use Effect Credit	-	-	8,816	229,221
		Transit Operations Debit	-	-	(725)	(18,841)
		System Operations Credit	110	661	991	25,764
		Total	**110**	**661**	**12,108**	**314,803**
City of Philadelphia	Indego Bike Share Program	Mode Shift Credit	286	1,713	259	6,730
		Mode Shift Debit	(4)	(21)	(3)	(84)
		System Operations Credit	6	34	4	114
		Total	**288**	**1,726**	**260**	**6,760**

	E-Bike Rebate Program	Mode Shift Credit and Debit	1,300	7,800	500	13,000
		Total	**1,300**	**7,800**	**500**	**13,000**
	Electric Vehicle Charger Installation and Workforce Development Program	Alternative Fuel Credit and Debit	6,207	37,244	4,093	106,413
		Total	**6,207**	**37,244**	**4,093**	**106,413**
SEPTA	**SEPTA**	**TOTAL**	**110**	**661**	**20,164**	**524,265**
City of Philadelphia	**City of Philadelphia**	**TOTAL**	**7,795**	**46,770**	**4,853**	**126,173**
ALL	**ALL**	**TOTAL**	**7,905**	**47,431**	**25,017**	**650,437**

Source: SEPTA, City of Philadelphia, ESI, 2024.

Performance Measures and Plan

Comprehensive Impact Assessment

The success of the Reimagining Regional Rail strategic initiative, along with the associated projects, will be evaluated against a set of performance metrics. These include the utilization rates of the expanded rail services, the effectiveness of the new fare structures in promoting transit use, the extent of GHG emission reductions, and the impact of the initiatives on fostering alternative transportation modes. This evaluation framework is key to gauging the contributions of these projects towards realizing Philadelphia's vision for a sustainable, integrated transit system.

Data-Driven Measurement and Reporting

Monitoring and reporting on the progress of these initiatives will involve a systematic collection and analysis of rail usage statistics, Indego usage, charging station usage, e-bike voucher redemption, environmental impact data, and community feedback. By producing comprehensive annual reports, the City and SEPTA aim to maintain transparency with stakeholders and the public, offering valuable insights into the achievements and areas for improvement. This data-driven approach ensures that the initiatives remain aligned with their environmental and social objectives, facilitating informed decision-making and strategic adjustments as necessary.

Adaptive Implementation and Continuous Improvement

Acknowledging the dynamic challenges associated with urban transit systems and transportation management, the initiative incorporates flexible strategies for adaptation and enhancement. This may include refining rail service schedules, expanding infrastructure investments, and intensifying community engagement efforts to maximize the benefits of the projects. Through a commitment to continuous improvement, SEPTA and Philadelphia seek to ensure that its shared vision for a sustainable and equitable transit future is fully realized.

Authorities, Implementation Timeline, and Milestones

Collaborative Governance and Oversight

Under the leadership of SEPTA, the City of Philadelphia, and the Philadelphia Parking Authority, and in

collaboration with an array of local businesses, community organizations, and federal partners, this initiative represents a model of collaborative urban planning and development. This collective governance framework ensures that the projects are meticulously designed and executed to meet the city's overarching goals of sustainability, equity, and economic vitality.

Strategic Phased Rollout

Commencing in 2024, the phased implementation of these projects will prioritize the improvements to the Regional Rail network as a foundational element of the city's transit overhaul. Supported by targeted enhancements in EV charging infrastructure, e-bike accessibility, and bikeshare services, the City components of the initiative will progress towards comprehensive completion by 2029 and beyond.

Visionary Outcomes for a Sustainable Future

Ultimately, this initiative aspires to establish an exemplary sustainable transportation ecosystem in Philadelphia, characterized by reduced GHG emissions, increased access to low-emissions mobility options, and enhanced socio-economic opportunities for all residents. With the Reimagining Regional Rail strategic initiative at its core, complemented by innovative projects in electric vehicle charging, e-bike accessibility, and bikeshare expansion, Philadelphia is poised to redefine urban mobility for the 21st century, exemplifying leadership in environmental stewardship, social equity, and economic resilience.

The timeline of all programs included in this application can be found below:

Applicant	Program	Phase or Component	Implementation Time Range	Benefit Time Range	Benefit in Performance Period
SEPTA	Freight-Commuter Rail Separation program	Phase 1 - RRR	2030 - 2035	2036 - 2050	Full Benefit
		Phase 3 - RRR	2040 - 2045	2046 - 2050	Full Benefit
SEPTA	Silverliner VI Rail Car Procurement Program	Silverliner VI Procurement	2025 - 2034	2023 - 2033	Partial Benefit
		Facility Improvements	2030 - 2040	2034 - 2050	Full Benefit
				2041 - 2050	Full Benefit years, but independent effects not modelled in GHG reduction
City	Indego Bike Share Program	Expansion (C1)	2025	2025 - 2027	Partial Benefit Year
		Electrification (C1)	2027	2028 - 2037	Full Benefit
		Electrification (C1) (Through April)	2028	2038 - 2050	Uncertain about the Benefit Years
City	Income-based E-Bike Voucher Program	Voucher (C2)	2025	2025 - 2034	Full Benefit
				2035 - 2050	Uncertain about the Benefit Years
City	EV Charger Installation Program	EV Charges (C3)	2025 - 2029	2025 - 2029	Partial Benefit Year
				2030 - 2034	Full Benefit
				2035 - 2039	Partial Benefit Year
				2040 - 2050	Uncertain about the Benefit Years

Section 4: Low-Income and Disadvantaged Communities

The commitment to deliver equitable environmental and social outcomes is at the core of these programs. By reducing dependency on fossil fuels and private vehicles, the combined measures by SEPTA and the City of Philadelphia promises a significant reduction in GHG emissions and an improvement in urban air quality, particularly in LiDACs that are disproportionately affected by airborne pollutants and the effects of climate change. The comprehensive approach to enhancing mobility options and improving the energy efficiency of both rail and bike fleets not only reflects Philadelphia's dedication to creating a sustainable urban environment, but also ensures that the dividends of cleaner, more efficient transportation are equitably distributed across the city's diverse population.

Community Benefits

All five measures provide GHG reduction benefits to communities in the Philadelphia MSA, which aligns with the goal of DVRPC's PCAP. At risk and LiDAC communities expected to benefit from the programs were identified through the EPA's Climate and Economic Justice Screening Tool (see attachment).

The City of Philadelphia's Indego Bike Share, Income-based E-Bike Voucher, and the EV Charger Installation programs strive to bring benefits to low-income and historically disadvantaged communities in Philadelphia. Among the 47,431 metric tons of CO2-e saved, over 62 percent, or 29,634 metric tons, can be attributed to LiDAC community members that utilize the new micromobility option and the EV charging stations nearby. Reductions in vehicular traffic that generates both GHG and co-pollutants improves air quality for these communities. Increased use of bikes and electric vehicles bring more GHG emission reduction benefits for over Period 1 due to the rapid implementation of these programs.

Over long term, the SEPTA measures can achieve significant benefits in LiDAC communities in the long term. With more frequent train service (up to 4 trains per hour all day) and more comfortable journeys, residents along the Norristown and Airport line will benefit from faster and more reliable travel by rail. Among the total of 650,437 metric tons of CO2-e, over 12 percent can be attributed to LiDAC communities. Both the rail separation and rail car procurement are essential in ensuring the more reliable transit service. Rather than investing heavily in building new public transit infrastructure for the communities, upgrading the existing ones can generate significant benefits for residents. Every resident can expect nearly 800 pounds of CO2-e GHG reduction benefits over 35 years from SEPTA's two measures, which is roughly equivalent to the total emission from energy consumption by nearly 2,000 households every year for 35 years.[8]

Table 7 GHG Emission Reduction Benefits for Directly Benefited Communities and LiDAC Communities

	Period 1 CO2-e			Period 2 CO2-e		
	Total Metric Tons	**Pound per Resident**	**Metric Tons for LiDAC**	**Total Metric Tons**	**Pound per Resident**	**Metric Tons for LiDAC**
Freight-Commuter Rail Separation	0	0.0	0	209,462	607.4	82,189
Silverliner VI Rail Car Procurement and Facility	661	0.4	190	314,803	191.1	90,517

[8] US EPA estimated that total CO2 emissions for energy use per home is 7.67 metric tons per year. https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#:~:text=Total%20CO2%20emissions%20for,2%20per%20home%20per%20year.

Improvement						
Indego Bike Share Program	1,726	6.3	950	6,760	24.6	3,722
Income-based E-Bike Voucher Program	7,800	10.8	4,967	13,000	18.0	8,278
Electric Vehicle Charger Installation and Workforce Development Program	37,244	51.5	23,717	106,413	147.3	67,763
Total	**47,431**		**29,634**	**650,437**		**79,763**

Source: SEPTA, City of Philadelphia, ESI, 2024.

SEPTA measures

The Freight-Commuter Rail Separation program and the Silverliner VI Rail Car Procurement program are both designed to deliver considerable improvements in safety and efficiency—particularly benefiting LiDACs along the Norristown and Airport Line corridors.[9] By mitigating the interaction of freight and commuter rail operations, the rail separation program will ensure that both commuter rail and freight rail service can expand to meet the demands of both residents and businesses. This expansion will benefit riders who rely on public transportation for accessing employment and educational opportunities.[10] Currently, 21 percent of LiDAC residents in the service area use public transit to commute to work, higher than the Philadelphia MSA (17 percent), and significantly higher than the area directly affected by the program (13 percent). Additionally, 32 percent of people who earn less than 80 percent of the Area Median Income (AMI) rely on public transit for commuting.[11] New technologies in the Silverliner VI cars like regenerative braking and modern AC propulsion will reduce SEPTA's energy use by over 20 percent, which means cleaner air along the rail train lines. Additionally, the new rail car is designed for those with mobility challenges, as wider aisles, accessible doors, better lighting, and climate control will enhance the transit experience.

Moreover, both measures will make travel more affordable, a cornerstone of the EPA grant requirements, by aiming to reduce the operational costs of the regional rail system. Optimized scheduling and reduced track-sharing with freight traffic will reduce costs overall, translating to more affordable fares over time. Currently, 38 percent of the households in LiDAC communities along the Norristown and Airport Line do not own a vehicle. The rail service improvement will provide a cost-effective mode of travel mode for many in LiDAC communities who may, today, find the cost, schedule, or reliability of service a barrier to using public transit.[12] This target demographic is specifically analyzed in the Equity Analysis, and the cost-saving measures are detailed in the Statement of Work.

City of Philadelphia Measures

The Indego Bike Share Program's Expansion project will have significant impacts on Philadelphia's underserved areas. This initiative offers residents a viable alternative to car travel, promoting equity in mobility while cutting emissions and lowering travel expenses for low-income households. Currently, only 5 percent of residents in the directly benefited, including LiDAC communities, use bike or similar micromobility to work. An expanded bike share system will make biking a more accessible option for more

[9] *SEPTA Freight Separations Attachment 5: Equity Analysis, CRISI Grant*
[10] *SEPTA Freight Separations Application Narrative, CRISI Grant*
[11] Based on 2022 5-year US Census Bureau data analysis on Benefited communities.
[12] *SEPTA Freight Separations Attachement 3: Statement of Work, CRISI Grant*

LiDAC communities, while providing more e-bikes and charging docks facilitates cycling across longer distances with less effort at a faster pace. This program is estimated to remove 950 metric tons of CO2-e GHG emission in Period 1 and 3,722 metric tons in Period 2 for LiDAC communities.

The City of Philadelphia's Income-Based E-bike Voucher Program will award 2,040 financial assistance vouchers to low- and middle-income households for purchasing e-bikes. This program ensures that affordable, sustainable travel is not a luxury, but a baseline standard for all city dwellers, notably in areas that lack consistent access to dependable and affordable transportation. By improving the affordability of e-bikes, the program directly tackles transportation inequities, granting improved access to employment, education, and healthcare opportunities. In parallel, it spurs local economic growth by catalyzing demand for e-bikes, which is projected to boost business for neighborhood bike shops and suppliers. This effort is estimated to remove 4,967 metric tons of CO2-e GHG emission in Period 1 and 8,278 metric tons in Period 2 for LiDAC communities.

The Electric Vehicle Charger Installation and Workforce Development Program will provide accessible EV charging stations in publicly accesible locations, supporting the alternative fuel network in Philadelphia. Charging stations would be installed at municipal parking lots, and other publicly accessible locations throughout the city. As the city transitions to electric vehicle, residents will benefit from reduced noise pollution given that EVs are much quieter than internal combustion engine (ICE), and reduced costs associated with maintenance and fueling. The program effort is estimated to remove 23,717 metric tons of CO2-e GHG emission in Period 1 and 67,763 metric tons in Period 2 for LiDAC communities.

The average automobile trip in Philadelphia is just 1.5 miles. According to estimates by Indego, one in four automobile trips could be replaced by a pedal bike and three out of five automobile trips could be replaced with an e-bike. As most LiDAC communities are in closer proximity to vehicular traffic compared to the average community in the Philadelphia MSA, according to the Climate and Economic Justice Screening Tool, the shift from car to bike would benefit LiDAC communities by lowering the residents' exposure for PM2.5, diesel particulate matter, as well as lowering lifetime cancer and respiratory disease risks associated with inhaling air toxic accompanying the vehicular traffic. Meanwhile, biking champions a healthier lifestyle by motivating physical activity, aligning with broader initiatives to advance environmental justice and promote well-being among all Philadelphians.

All three measures represent a significant move towards the city's vision of inclusive growth and equitable distribution of green transportation advantages across all communities. With Indego's growth interwoven with Philadelphia's pulse, the measures commit to an evolving transit system that bolsters community well-being and cement city-wide resilience.

Community Engagement

SEPTA and the City of Philadelphia are advancing significant decarbonization measures in transportation sector to enhance service for all Philadelphians, especially prioritizing inclusion for low-income and disadvantaged communities. By fostering a participatory process in the Freight Separation project and the Silverliner VI Rail Car Procurement and Facility Improvement program, SEPTA ensures community needs shape service enhancements. Che City's EV Charger Installation Program, E-bike Voucher Program and Bikeshare initiatives complement these efforts by expanding sustainable transportation options,

reinforcing the collective commitment to a more equitable and resilient urban transit network in the Greater Philadelphia.

While SEPTA is undergoing a public comment period for the Reimagine Regional Rail study, more community engagement activities are on their way for the two measures included in this application. The planned community engagement strategies include

- Interactive virtual town halls and targeted social media campaigns, initiate crucial dialogues to improve job access and commuting experiences for disadvantaged groups, directly addressing their unique challenges and needs.
- Endorsed by DVRPC, the PCAP development agency, SEPTA will coordinate with recognized community organizations, local elected officials, public interest organizations and freight rail operators to weave community feedback into each project phase through (feedback integration methods). Educational initiatives spotlight the project's safety and environmental benefits, especially those around the environmental benefits of the new vehicles and their advantages to riders, the new operations, the new operating paradigm for SEPTA Regional Rail and the practical effects of new freight routings, will be hosted in focused group sessions.
- Provide transparency by regularly sharing updates via reports and dashboards under the guidance of the community advisory panel as appropriate
- Collaborating with the City to align transit initiative to assess the need for multimodal trips that include commuter rail trips and bike trips, creating a seamless, sustainable urban transit system

In separating the tracks and renewing its fleet, SEPTA is dedicated to delivering a modernized high-frequency transit experience that prioritizes both environmental stewardship and the needs of its diverse ridership.

The City is dedicated to harnessing community insights through proactive outreach to expand, electrify, promote biking and EV infrastructure for Philadelphian.

- The Equity Plan has a site selection process for Indego bike share program.[13] In addition, for each new station the City install, the Community Engagement team will conduct multiple points of outreach to engage stakeholders from Responsible Community Organizations, neighborhood associations, Business Improvement Districts to assess the community needs and gather input about where to place new bike share stations to optimally serve the community.
- The Indego bike share program has established 3 equity goals: 1) the served demographic of the service area should match the growing diversity of the city; 2) 15% of total trips is for ACCESS passholders; 3) 15% of total passholders hold ACCESS pass.[14]
- Fostering partnerships with local organizations to conduct educational, business facilitation, and technical training programs to ensure community workforce benefits result from installed EV chargers and e-bike voucher distribution, and to ensure communities have access to information about the benefits of publicly available electric vehicle charging infrastructure. The city works and will continue to work closely with bike shop owners, community partners, and workforce partners of the Plug In Philly program.
- Consistent transparency will be maintained documenting EV charger installation and uptime, e-

[13] City of Philadelphia, 2023. Indego Equity Plan. https://www.phila.gov/documents/indego_equity_plan_2023/

[14] ACCESS pass is Indego's reduced fare pass, which opens to individuals who receive PA ACCESS benefits. Monthly pass is only $5 and the annual cost is $48, much lower than the normal costs ($20 monthly, $156 annually).

bike voucher enrollment details and rollout, to instill community confidence and ownership over the expansion process.

Section 5: Job Quality

These programs collectively showcase SEPTA and the City of Philadelphia's dedication to not only improving the transportation network but also to investing in community outcomes through job creation and workforce training. The programs described herein support the creation of a diverse array of construction, engineering, management, and trade positions.

SEPTA

SEPTA adheres to federal prevailing wage requirements and will ensure fair compensation of workers employed in each project. The system relies on a diverse and well-trained workforce of engineers, conductors, managers, and construction workers who are all members of labor unions who exercise collective bargaining rights.

The Freight-Commuter Rail Separation Program and the Silverliner VI Rail Car Procurement and Facility Improvement Program will fall with the requirements of 49 U.S.C. § 5323(j), known as the Buy American Act. To the greatest extent feasible, production of the vehicles will be undertaken at a factory within the United States and, depending upon the manufacturer selected through a competitive bidding process, the size of the order will likely require the creation or significant expansion of a manufacturing workforce. These programs prioritize developing a skilled workforce and ensuring high-quality service through training and apprenticeship programs to meet staffing needs.

The City of Philadelphia

Indego Bike Share Program

The expansion of the Indego Bike Sharing program will support quality green jobs through the installation and maintenance of new bike share stations and the deployment of new e-bikes.

Income-based E-Bike Voucher Program

By supplying 2,040 vouchers to eligible low and moderate-income residents who value affordable, healthy, and sustainable travel, the Income-based E-Bike Voucher Program will provide an infusion of demand to many small businesses, especially bike shops and related recreational retailers who provide vehicles, accessories, and maintenance services. Working with local bike shops, in particular those that that have not yet obtained the capacity to sell e-bikes, program staff will identify business and workforce development opportunities related to e-bikes for shop owners. With a $2 million budget, the Income-based E-Bike Voucher Program will provide a substantial benefit to local businesses and a valuable transportation option for residents.

Electric Vehicle Charger Installation and Workforce Development Program

To support the installation of new electric vehicle charging stations in the region, the City is leading a targeted workforce training initiative called Plug In Philly. This initiative is currently underway and supported by funding from the U.S. Joint Office of Energy and Transportation (Joint Office), supported by

the Vehicle Technologies Office (VTO), through the Ride and Drive Electric grant program. In partnership with ATEI/IBEW Local 98, the Plug In Philly program will empower aspiring EV supplies and equipment (EVSE) workers. This initiative will empower and train Philadelphia's low-wage workers, overwhelmingly women and racial minorities, for high-paying opportunities in EVSE-related fields. Following the best practices developed by the Plug In Philly pilot, the EV Charger Installation and Workforce Development program included in this application will expand access to career-track training and employment in EVSE installation and maintenance work for disadvantaged Philadelphia residents. In addition, the installation of EV chargers by the City of Philadelphia will include local and economic hiring preferences in procurement practices targeting graduates from the workforce development initiative. Ultimately, Plug In Philly and similar workforce development programs will increase and diversify the workforce needed to make a national EV charging station network possible. The workforce program will incorporate lessons learned from Plug In Philly partners including Philadelphia Works Inc., and the Community College of Philadelphia.

Section 6: Programmatic Capability and Past Performance

Past Performance

SEPTA and the City of Philadelphia are performing or have performed five federally funded or non-federally funded assistance agreements within the last three years:

SEPTA:

1. 30th Street Station Improvements (FY 2018 BUILD)
2. Regional Rail Grade Crossing Safety Improvements (FY 2020 CARSI)
3. Work Train Locomotive Replacement Project (FY 2022 CMAQ Flex)
4. Wissahickon Transportation Center (FY 2016 5339(b))
5. Complete Streets Concepts & Design for the Grays Avenue Corridor (FY 2020 Helping Obtain Prosperity for Everyone)

CITY OF PHILADELPHIA:

1. Woodland Avenue Trolley Portal Complete Streets Project, $1.5 million (FY 2022, PA DCED Multimodal Fund)
2. Great Streets PHL: Revitalizing Philadelphia's Neighborhood Roadways, $25 million (FY 2022, US DOT RAISE)
3. Direct Bus Phase II, $2 million (FY 2020, US DOT Buses and Bus Facilities Grant Program)
4. Southeastern Pennsylvania Class 8 Diesel Vehicle Replacement Program, $2 million (FY 2019, PA DEP Driving PA Forward)
5. Roosevelt Boulevard Direct Bus, Phase B, $3 million (FY 2018, PA DCED Multimodal Fund)

Reporting Requirements

Both SEPTA and the City of Philadelphia have a solid and reliable track record of meeting reporting requirements under grant agreements.

SEPTA: SEPTA is required as a direct recipient of federal assistance through Section 5307 Urbanized Area

Formula Grants to annually report operational and ridership data to the National Transit Database. The Authority has designated an Operating Budget Specialist to perform this regular reporting, which SEPTA has consistently done since the mandating of reports to the predecessor of the NTD, the Section 15 requirements, or Uniform System of Accounts (USOA) and Reporting System in 1978. Receipt of Section 5307 assistance further requires annual reports listing projects funded through the program, which has been assigned to the Authority's dedicated grant development staff as an annual function.

All competitive awards made to SEPTA require quarterly reporting in various forms. Compliance with the terms of the BUILD and CMAQ awards all entail filing quarterly performance reports, responsibility for which is assigned to the respective program managers of the projects funded by the awards, with oversight from SEPTA Grant Development, which also prepares the quarterly form SF-PPR required for the CARSI award. This regular assignment of roles and oversight has ensured that the reports have been delivered consistently over the lifetimes of the projects. The milestone progress reports required for the HOPE grant award were managed similarly. The Authority's Supervisor of Billing & Cash Management oversees preparation and submission federal financial reports required by the BUILD and CMAQ grant awards as well the submission of a quarterly form SF-425 for the CARSI award.

City of Philadelphia: The City of Philadelphia has a long history of delivering successful capital projects, including federal TIGER, RAISE, and Safe Streets project. The City has continually proven to be a reliable steward of federal funding and is well-versed in the reporting requirements associated with federal grants.

The Managing Director's Office of Transportation, Infrastructure, and Sustainability (OTIS) is responsible for overseeing grant management and reporting. OTIS manages several of Indego's functions, including: strategic development of Indego; grant implementation and reporting; managing the concessionaire contract with Bicycle Transit Systems (BTS) to operate and expand the system; managing Indego's supportive educational programming; seeking grant funding; assisting community engagement and outreach efforts; and serving as the main connection between the program and other City departments.

Staff Expertise

SEPTA**:** Implementation of SEPTA's programming will be executed principally by the Rail Equipment Engineering & Maintenance (REE&M) section within the Bus and Rail Department of the Authority's Operating Division. The Operation Division integrates daily regular provision of transit services with support services, most notably SEPTA Transit Police, engineering, and maintenance. Administration of grant funds will be performed by or under the oversight of the Grant Development Section of the Budgets & Transformation Department of the Authority's Finance Division. Grant Development is responsible for researching and preparing applications to competitive grant opportunities and administering any competitive or formula grant awards that SEPTA might receive.

Actual implementation within Operations will be overseen by the Deputy Chief Operations Officer and directly managed by the Assistant Chief Operating Officer of and Senior Director of Vehicle Maintenance. Staff in this department have extensive, specialized experience in the maintenance and operation of rail vehicles. A significant number of staff have integrated practical and managerial experience cumulatively acquired from working as a vehicle mechanic or operator, then taking roles of progressively greater responsibility in managing related tasks.

SEPTA is also a sufficiently large and deeply resourced organization to be able to recruit experienced and well-trained talent for senior positions. The Grant Development section of the Budgets and Transformation Department comprises a Manager and two Management Analysts, all with diverse, well-cultivated experience in the various stages of winning and administering federal grant awards and awards from other grantors, periodically refreshed through attendance of Federal Transit Administration Triennial Review seminars and participation in the reviews themselves.

SEPTA typically relies to the greatest extent feasible upon its own personnel to perform core and routine functions pertaining to vehicle engineering and maintenance or grant development but has the capacity to commission assistance from consulting firms to meet specialized needs or demand in excess of available internal staff. SEPTA REE&M and Grant Development both have standing authorization and capacity to engage consulting forms for appropriate assistance when necessary. Both departments have used such assistance in the past and have established relationships with qualified and successful external firms.

City of Philadelphia: OTIS is charged with driving change through our transportation and infrastructure systems. OTIS staff have a passion for Philadelphia and are dedicated to making a positive impact. OTIS collaborates with a wide variety of organizations such as Amtrak, DVRPC, PATCO, PennDOT, and SEPTA.

The projects submitted for this grant will be overseen by Anna Kelly, OTIS' Senior Advisor for Parking and EV Policy and Waffiyyah Murray, Indego Bikeshare Program Manager. Waffiyyah manages a team of program coordinators and outreach staff in partnership with Bicycle Transit Systems, the operator of Philly's bikeshare program. Both programs have strong government and community partnerships that will ensure that projects can be successfully implemented.

Section 7: Budget Narrative

Please see the attached 10-page budget narrative for more information.