

Moving Birmingham Towards Climate Action

1. Overall Project Summary and Approach.

The City of Birmingham is requesting \$9,830,00 in funding for a suite of complimentary projects which were identified in the City's Clean Air & Birmingham March 2024 Birmingham-Hoover Metropolitan Statistical Area Priority Climate Action Plan (PCAP). The following GHG reduction measures were identified from the PCAP as they were determined to be the most suitable for rapid implementation and most impactful in terms of near-term GHG reductions.

1. City Vehicle EV Fleet Conversion

2. Electric Bike Voucher Program

3. Comprehensive Transportation Oriented Development Corridor Plan

All 3 of the identified projects are focused on the transportation sector and reduce GHG emissions while simultaneously providing separate but interconnected benefits to the residents of Birmingham.

Birmingham has a long history with environmental justice issues that have negatively impacted residents for generations. The ABC Coke Plant in North Birmingham, a superfund site and one of the worst polluting coke factories in the United States, has contributed to negative health impacts and poor air quality for North Birmingham residents for decades. These impacts are felt the most by black and minority residents who have suffered health consequences and reduced property values by the actions of these industrial sites located in their neighborhoods. ABC Coke is just one of many associated with the steel industry which have had a continuous negative impact on the Birmingham's air quality since the founding of the City. Prior to 2013, Birmingham was a non-attainment area for Air Quality as designated by the EPA, and still today has some of the poorest air quality in the Southeast. According to the American Lung Association's State of the Air Report in 2023, Birmingham ranked as the 39th most polluted city for ozone pollution and received an F grade for ozone for a 3-year period.

While these environmental justice related issues will take vast amounts of funding, clean-up, and coordination to remedy, one area where Birmingham is equipped to make an immediate impact is in the transportation sector, which is the focus of this grant. According to an analysis using EPA calculators conducted by Inside Climate News, Alabama has the highest per-person gasoline consumption in the United States.* Therefore, any impact made on transportation-related emissions can have an outsized impact for Birmingham residents. The identified GHG reductions measures also have a high potential to create culture shifts and could potentially reduce GHG emissions beyond the scope of the project themselves. For example, new bike facilities can encourage more residents to apply for and utilize E-Bike vouchers, as the network becomes more viable. E-Bike users could also use the E-Bikes as first-and-last mile solutions to travel to Transit Oriented Development where they can connect to the federally funded Birmingham Xpress BRT system. City EVs could be prominently seen throughout the City and encourage quicker adoption of EV's by residents and improve air quality at a micro-scale while conducting slow-moving services through neighborhoods.

*See technical appendix page 3

Description of GHG Reduction Measures.

1.A.1 City Vehicle EV Fleet Conversion.

Description and Features.

The conversion of City-owned and maintained vehicles is a particularly viable and implementable GHG reduction strategy for Birmingham to pursue as it is one of the few reduction measures in which Cities have complete control. Unlike other reduction measures which may require culture shifts, such as the adoption of alternative modes or policy shifts that could require complex land-use alterations and property acquisitions – vehicle conversion is a relatively simple process – as new vehicles are needed, the City replaces them with EV's instead of internal combustion engines (ICE).

The City of Birmingham acknowledges that not only is it infeasible from a financial standpoint to replace every single vehicle with an EV but it would also be ill-advised from a sustainability standpoint as well. As such, the City is prioritizing the replacement of vehicles that are already at or well beyond their reasonable service life of 7 to 8 years and have been in service for over 10 years, allowing those ICE vehicles to be decommissioned and directly replaced with EVs. According to a study from the Union of Concerned Scientist¹, pre-2004 passenger vehicles emit three times as much pollution as newer vehicles. Today, 135 of Birmingham's in-service vehicles were manufactured in 2004 or earlier. If awarded, the City would be able to replace all 135 of the 2004 and older models.

By using this strategy, we would ensure that the greatest possible GHG reduction impact occurs, as these older vehicles are more likely to produce higher rates of GHG emissions. Finally, only vehicles that are always parked and housed on City-owned lots would be replaced by this grant to ensure that those vehicles always have access to charging facilities.

As part of the grant, the City is requesting funding for the installation of the necessary charging infrastructure to ensure the acquired vehicles are able to remain in service on a daily basis. Chargers could be located and concentrated on key Department of Public Works sites to ensure that the most efficient charging strategy is used. By concentrating charging infrastructure, vehicles can rotate through chargers as needed, as each vehicle will not need charging every day. The City anticipates that 1 charger per 4 vehicles would be needed, and charger acquisition and installation is estimated at \$10,000 per charger. This cost estimated is based on the U.S. Department of Energy's Cost Associated with Non-Residential Electrical Vehicle Supply Equipment November 2015 report which provides estimates of cost for various commercial grade chargers. The \$10,000 per charger accounts for potential trenching. Transformer installation, or costly wire which can dramatically increase EV charging infrastructure cost.

the City is requesting \$7,830,000.00 for the replacement of approximately 180 Vehicles and 45 level 2 commercial grade chargers to support the daily use of those vehicles. The table below is an estimated breakdown by vehicle type. The estimated cost is based on the MSRP of an example vehicle which would fit the needs of the City. Due to supply and availability constraints as well as the specific needs that would be identified by the Department of Public Works, the vehicles listed are not necessarily the exact make and model the City would purchase, but instead should be viewed as a best possible approximation of the style of vehicle that would be needed:

¹ Union of Concerned Scientist; Cleaner Cars, Cleaner Air: https://www.ucsusa.org/sites/default/files/2023-06/cleaner-cars-cleaner-air-report_0.pdf

Vehicle Type/Charger	Example Model	Unit MSRP	Number of Units	Total Cost
Compact Car	2024 Nissan Leaf	\$30,000	45	\$1,305,000.00
Crossover/Full-Size Sedan	2024 Kia Nero EV	\$40,000	45	\$1,800,000.00
Truck/Full -Size SUV	Ford F-150 Lightning	\$50,000	45	\$2,250,000.00
Full Size Cargo/ Passenger Van	Ford EV Transit Van	\$46,000	45	\$2,025,000.00
Dual EV Charging Station Level 2	Cyber-Switching Commercial Dual EV Station CSE1 Level 2 48 A with installation	\$10,000	45	\$450,000
Sum Total			160	\$7,830,000.00

As stated above, the summary table is a best possible estimate of cost. Due to the ability for government entities to receive some level of discounts for fleet purchases as well as possible efficiencies that could be gained by concentrating charger stations, it is possible cost could be lower. In that scenario, the City would simply purchase additional EV's.

Finally, the City would ensure that EV's purchased as part of the grant are utilitarian in nature meaning that only the most necessary trim packages would be selected and luxury or prestige brands would not be considered for purchase.

This measure was selected for implementation from the PCAP for the following reasons. The City has a severe need for updated vehicles, with a large portion of the existing fleet being well over its reasonable expected service life. This puts a strain on the City's ability to provide regular services to residents as the long-term reliability of these vehicles is in question. This measure is also one of the GHG reduction measures that can be implemented most rapidly, due to no intensive planning or outside coordination being necessary. Finally, it's GHG reduction impact can be felt very quickly, and can provide a model to other municipalities in the region for the validity of EV Fleets. This measure is identified in the PCAP under *2.2.2 City Vehicle Fleet Conversion*.

Tasks and Milestones.

Task	Milestone
Establish a purchasing plan with cost estimates for vehicles.	Completion of purchasing plan.
Begin acquisition of EV's to 50% of funding allocation.	Purchase of at least 60-90 EV's.
Acquisition and installation of Level 2 EV chargers.	Level 2 chargers are installed and utilized.
Acquisition of EV's to 100% of funding.	Purchase of 60- 90 additional EV's, exhaustion of allocated budget for vehicles and chargers.

Risks and Mitigating Actions.

Risk	Mitigating Action
Vehicle availability	Willingness to work with multiple vendors, phased acquisition timeline based on replacement urgency. Flexibility on make/model.
Unanticipated utility or infrastructure cost for charging facilities.	Flexibility in charger locations, additional budget is requested to accommodate unanticipated cost.

1.A.2 Electric Bike Voucher Program.

Description and Features.

In the past 5 years, the City has made great strides in making alternative transportation more viable with the construction of 42 miles of trail and on-road bicycle facilities. Despite these improvements, using a conventional bicycle in the City is difficult. Not only does Birmingham's hilly topography present a challenge in reaching destinations, but using a conventional bicycle is still drastically slower than other forms of transportation. Electric Bicycles (E-Bikes) present an enticing solution to both of these barriers by decreasing travel times and reducing the challenges presented by topography.

As part of the grant the City of Birmingham is proposing the launch of an Electric Bicycle (E-Bike) Voucher program to aid residents in the purchase of an E-Bike. If awarded, the City would partner with a non-profit entity to establish a system with which qualified residents could receive a one-time point-of-sale voucher to put towards the purchase of an E-Bike. The City has secured agreements from two local 501(c)(3) non-profits to aid in program administration; the Community Foundation of Greater Birmingham and the Cawaco RC&D Council. If awarded, the City would assess the full capacity of both organizations to determine the best fit for implementation and would select one of the two non-profits to aid in implementation as a sub-awardee of the grant. Both the Community Foundation of Greater Birmingham and Cawaco and submitted letters of support for this grant. Once selected, the City would enter into an MOU with the non-profit by the July deadline per the requirements of the NOFO. The non-profit would then be a subawardee of the grant funding via City Council resolution.

E-Bike voucher programs are not without precedent in the US and have been shown to be an effective and popular GHG reduction measure. The state of Colorado, in particular, has seen successful programs at the state level as well as from the cities of Denver and Boulder. The City would model its program after established e-bike programs in the U.S. to better ensure the successful delivery of E-Bike vouchers.¹

Based on the case studies provided by pilot programs in other cities, Birmingham would work with the non-profit partner and publish an RFQ to seek out a qualified consultant with experience successfully managing E-Bike Incentive programs. To ensure that the program is equitable, the City would utilize a limited time, window lottery system for residents to apply to the program which would also be administered by a third-party consultant. This would ensure that residents would not be constrained by internet speeds or work hours to apply for the program.

To ensure that E-Bikes sold under the voucher program are safe and properly assembled, the City would limit the use of Vouchers to local participating bicycle retailers only and would disallow the purchase of E-Bikes from online vendors. To stimulate the local economy, vouchers would be limited to bike shops operating within the City. Redemptive Cycles, a non-profit community-oriented bike shop and the only bike shop currently within the City limits have included a letter of support for the grant and has agreed to accept vouchers if the grant is awarded. This will also ensure that repairs and replacements parts are easier for voucher recipients to acquire. The City would limit the selection of E-Bike types to those which could feasibly serve a commuting and alternative transportation purpose by disallowing the purchase of full-suspension E-Mountain Bikes or drop-bar road racing style E-Road Bikes.

To implement this measure, the City is requesting \$1,500,000 for the E-Bike Voucher program. The requested funding includes anticipated administrative cost from both the non-profit partner and the selected third-party consultant. This reduction measure is identified in the PCAP under 2.2.3 *Electric Bike Voucher Program*.

1 https://peopleforbikes.cdn.prismic.io/peopleforbikes/a2665293-d229-434b-832a-a0784b2edfd5_ebikeincentive_onepager_2022.pdf

Tasks and Milestones.

Task	Milestone
Select most qualified non-profit partner for program administration.	Enter into formal agreement with selected non-profit and award funding as a grant sub-awardee via City Council resolution.
Issue RFQ for qualified consultant to administer E-Bike voucher program.	Selection of consultant, contract agreement with non-profit sub-awardee and selected consultant.
Public outreach to inform residents of E-Bike voucher program.	Establishment of a project website. Multiple (at least 3) demo E-Bike events across the City. Press releases and news articles/segments highlighting the program.
Agreements are made with local bike shops to accept E-Bike Vouchers.	Local bike shop enters into an agreement with the non-profit and consultant to accept E-Bike vouchers.
Lottery system is opened to distribute vouchers to residents.	Residents receive E-Bike vouchers.

Risks and Mitigating Actions.

Risk	Mitigating Action
Low public participation and request for vouchers.	Robust and multifaceted public outreach strategies to ensure a broad audience is reached using in person, online, TV, radio and other medias.
Low inventory of bikes available for vouchers due to supply-chain issues.	Potential phased approach with Spring/Fall or Winter/Summer divisions of voucher program.

1.A.4 Comprehensive Transportation Oriented Development Corridor Plan.

Description and Features.

Transportation Oriented Development (TOD) is an opportunity for the City of Birmingham to remediate a controversial past with environmental justice and shape an equitable future for all of its residents through conscientious land use planning. The City is requesting CPRG funds to create a Comprehensive TOD Corridor Plan (the plan) along the Birmingham-Jefferson County Transit Authority's (BJCTA) Bus Rapid Transit (BRT) routes, as well as one to two other high frequency transit routes. The plan will include an existing conditions analysis that identifies two to three areas that are ripe for TOD and transit connectivity opportunities. In addition to identifying areas that are able to support TOD, the plan will also include recommendations for strategic locations along the corridor that small-scale intermodal mobility hubs, also known as Dutch Mobility Hubs could be placed, as well as conceptual designs for what these hubs will look like for Birmingham. The plan will also include land-use recommendations within a ½ mile of the corridor that would lead to increased population density to support BRT. According to the U.S. Census, 75% of Birmingham workers drive alone and roughly 2,000 people rely solely on BJCTA's public transit for commuting ¹. The Comprehensive TOD Corridor Plan is a critical step in enabling the establishment of TODs that can reduce GHG emissions and ensure the future of the City's overall mobility health by lowering Birmingham's SOV rate and increasing public transit ridership.

TOD is a land use strategy that focuses on creating compact, walkable, mixed-use communities that include a variety of transit options. Currently, Birmingham's most widely used transit option is BJCTA's BRT system, the Birmingham Xpress (BX). While the BX does connect 25 neighborhoods with 32 stops along its ten-mile East-West corridor, the BRT system does not offer any North-South connections. This has created an equitable access issue for Birmingham residents living in the City's North and South quadrants. The Comprehensive TOD Corridor Plan will consider the impacts of this equitable access issue on Birmingham's mobility and connectivity needs and determine the measures needed to establish a North-South BRT corridor. The existing conditions analysis will identify the areas along the existing East-West corridor that are most viable for TOD, as well as explore expansions that can be accomplished to facilitate connectivity to destinations along the East-West corridor and future North-South corridor.

In a previous internally conducted study, the City found that the BX requires at least 15 units of housing per acre within a ¼ mile of each BRT station for the BRT to be financially sustainable. The majority of BRT stations have less than 7 units of residential housing per acre. This lack of density has pushed the City to prioritize land-use strategies that will increase density to support the BRT. Expanding on the ¼ mile buffer that was previously studied, the City is seeking to increase density within a ½ mile of the BRT corridor. This planning effort will allow for strategic land-use recommendations to increase sorely needed housing density along the corridor.

The City is requesting \$500,000 to fund the plan. For the preparation of a Comprehensive TOD Corridor Plan, the City is prepared to utilize a qualified firm with a multifaceted skill set. The ideal candidate will be an outside consultant with a multidisciplinary planning team. To ensure that the prime candidate is selected from the RFP process, the City has designated a multi-departmental RFP committee that will review each bid. The City has received a letter of commitment, and will be entering into an MOA with BJCTA to ensure the success of the plan once it is implemented. As with any planning effort there are always risks involved. The primary risk being that planning is never a guarantee of implementation. However, without planning, the City will not be as prepared as possible to support the BRT and other multimodal efforts. This reduction measure is identified in the PCAP under 2.2.4 *Transportation Oriented Development Area Planning*.²

1 <https://www.census.gov/data.html>

Tasks and Milestones.

Task	Milestone
Creation and announcement of an RFP to select the consulting team that will write the plan.	Completion of the RFP process with a qualified consultant selected.
Organization of at least 3 public engagement meetings.	3 public engagement meetings are completed.
Producing a final draft of the plan.	The final draft of the plan is presented to and adopted by the Birmingham Planning Commission.
Implementation of the plan.	The City of Birmingham begins implementing the plan.

Risks and Mitigating Actions.

Risk	Mitigating Action
Resistance from residents that delay the adoption of the plan.	Planning staff are prepared to engage in informative participation exercises with the community ahead of the formal planning process to provide educational opportunities to learn more about TOD.
No guarantee of implementation.	Collaborating with community partners and identifying key milestones and deadlines, allocating resources, and establishing a communication plan to ensure implementation of the plan stays on track.

1.B Demonstration of Funding Need.

1.B.1 City Vehicle Fleet Conversion.

Today, The City of Birmingham struggles to maintain a fleet of vehicles in good, working conditions not beyond their reasonably expected service life. For a municipal fleet, it is typically expected that vehicles should be phased out or replaced after around 7-8 years of service. Despite that, Birmingham has made do with a very large number of vehicles that are well beyond their reasonable service life, with 457 in service vehicles older than 8 years, 202 of which are at least 16 years old, twice the expected service life of a fleet vehicle. As such, the need for new vehicles is clear for the City of Birmingham and not only would an award for EV vehicles for the City reduce GHG emissions but would also enable the City to save considerable funds annually that are spent maintaining costly, out of date ICE vehicles.

1.B.2 E-Bike Voucher Program.

Due to existing State legislation, even if the City was in a position to dedicate and budget funding to the establishment of an E-Bike voucher program it could not do so. Alabama municipalities are prevented from offering a direct benefit to residents, and as such, any funding for a voucher type program must come from an outside source such as this grant, and then coordinated with an outside non-profit entity to distribute the funding. Consequently, the only opportunity to offer such a program is through grants or similar programs.

1.B.3 Comprehensive Transportation Oriented Development Corridor Plan.

It is well known that the state of Alabama is acutely lacking in aggressive environmental policies and progressive transportation programs. In 2022, Alabama was number eight on the EPA's Toxic Release Inventory (TRI) out of 56 US states and territories. The TRI tracks discharges and emissions of nearly 800 harmful CAPS and hard-to-abate sectors ¹. Alabama remains one of only three states that do not provide any state funding for public transportation ². The other two states, Hawaii and Nevada, had a combined population of 4.5 million people in 2021, 860,000 less than Alabama's 5.4 million people ³. Owing to the fact that the state government contributes \$0 to funding public transportation, Birmingham must be proactive in seeking out funding sources, such as the CPRG Implementation Grant. Due to Alabama's lack of enforcement when it comes to pollution regulations and the Alabama Legislature's unwillingness to amend the state constitution to enact policies that would allocate state funds for public transportation, state municipalities must take up the fight to ensure the reduction of GHG emissions and adequately fund their own public transit programs.

TOD reduces travel times, congestion, and emissions as well as expands access to different areas of the city, which leads to stimulation of economic activity ⁴. Since such a large majority of Birmingham residents reside in LIDACs, the need to implement TOD land use strategies is paramount. Unfortunately, while the City has the capacity to implement a Comprehensive TOD Corridor Plan in partnership with BJCTA, they do not have the means to fund the plan. Birmingham and its community partners have explored and received several federal grants over the last few years, such as the U.S. Department of Housing and Urban Development's (HUD) \$50 million dollar CHOICE Neighborhoods Implementation grant, the U.S. Department of Transportation's (USDOT) RAISE grant for \$21.7 million dollars, and USDOT's Connecting Neighborhoods grant for \$800,000. Grant funding is critical for accomplishing projects in Birmingham, the Comprehensive TOD Corridor Plan will complement the extensive TOD accomplishments the City is already undertaking. Relying heavily on grant funding to finance projects necessitates leadership to make difficult decisions on what to prioritize applying for.

1 <https://www.epa.gov/toxics-release-inventory-tri-program/tri-data-and-tools>

2 <https://www.alarise.org/resources/alabamas-road-to-a-better-public-transportation-future/#:~:text=However%2C%20Alabama%20is%20one%20of,license%20fees%20for%20public%20transportation.>

3 <https://www.census.gov/data/what-is-data-census-gov/latest-releases/2021.html>

4 <https://www.smartcitiesdive.com/ex/sustainablecitiescollective/transit-oriented-development-requires-more-transit-and-development/7548/>

1.C Transformative Impact.

1.C.1 City Vehicle Fleet Conversion.

An injection of modern EV vehicles to the City's vehicle fleet would have a massive transformative impact on the City's day-to-day operations. As previously stated, the City has an extensive number of vehicles that are well beyond the expected service life of a fleet vehicle. As such, a grant award for the delivery of City EV vehicles could greatly reduce the number of outdated vehicles in operation.

These older vehicles require more periodic service and parts replacements and are oftentimes the worst offenders in terms of GHG emissions. By allowing these vehicles to be retired from service, the GHG reductions impact would be immediate as any EV vehicles would not be simple fleet additions but instead would serve as outright replacements.

Along with the proposed number of new vehicles entering the fleet, the addition of EV charging infrastructure would be a large incentive for the City to continue to purchase EV's as vehicles are needed outside of the limitations of the grant. By transitioning a large amount of the existing fleet to EV's, the City is further incentivized to invest in new EV's and implement a much more rapid transition away from ICE vehicles than would otherwise be possible.

Finally, City vehicles are commonly seen throughout the community, and as such, a mass roll-out of EV's throughout the City could demonstrate to residents that the technology is viable and ready for adoption today.

1.C.2 Electric Bike Voucher Program.

The transformative impacts of E-Bike voucher programs are multi-faceted and have community benefits extending beyond GHG reductions. Based on the RMI calculator, each individual who purchases an E-Bike could save around \$200 a year on travel cost and maintenance alone from short-trip replacements. This benefit increases significantly if two car households replace a single automobile with an E-Bike, which would unburden them from the cost of monthly insurance premiums, fuel, maintenance, and annual tag and title registrations.

Widespread adoption of E-Bikes can also lead to health benefits for Birmingham residents. According to the Alabama Department of Public Health, Alabama has an adult obesity rate of 38.3%, the 6th highest in the nation.¹ Therefore, the physical exercise and health benefits of E-Bikes for Birmingham residents is significant and should not be overlooked. In a study conducted by the Journal of Transportation Research Interdisciplinary Perspectives, it was found that E-Bike riders engage in equivalent levels of physical activity as conventional bicycle riders as they tend to go farther distances while spending the same amount of time cycling. The same study found that riding an E-Bike resulted in higher average heart rates than walking, potentially resulting in greater cardiovascular benefits for users¹. In fact, E-Bikes may encourage greater physical activity than conventional bicycles as they help to overcome barriers that prevent individuals from getting on a bike in the first place such as topography, heat, and anticipated travel times.

Additionally, the same study showed that transit mode-share also increased with E-Bike ownership, indicating that E-bikes incentivized transit utilization which was previously deemed infeasible by the study participants. This highlights that E-Bike voucher programs may have additional GHG reduction effects which are not accounted for GHG reductions calculations in the technical appendix.

1 <https://www.sciencedirect.com/science/article/pii/S259019821930017X>

LIDAC communities may benefit especially from an E-Bike as LIDAC's are often located farther from essential services, jobs, and medical care. E-Bikes can increase transportation access and help connect LIDAC residents to these services.

Finally, the rapid deployment of large amounts of E-Bikes throughout the community would make the technology more prominent and accepted as a legitimate form of transportation while supporting local bike shops. Word-of-mouth from voucher recipients could potentially increase the adoption of E-bikes beyond the initial project. If successful, the City could seek future funding opportunities to replicate the program on a sustainable annual scale. The Birmingham E-Bike voucher program could also serve as an example for the region, and incentivize other municipalities to consider E-Bike voucher programs or incentives for their residents.

1.C.3 Comprehensive Transportation Oriented Development Corridor Plan.

As the largest city in central Alabama, Birmingham has the ability to be an influential leader for other municipalities in the region. In addition to seeking out funding for TOD projects, the City has undergone significant zoning reform within the last few years to encourage density and TOD. Planning staff have undertaken a successful internal audit of the Zoning Ordinance to see where the City can tactfully increase density and expedite the creation of compact, walkable, neighborhoods through zoning regulations. The City has created Urban Neighborhood, a zoning district that is intended to bridge the gap between single-family homes and large-scale multi-family apartments. Urban Neighborhood allows for 2-12 units of housing on a lot and permits modest commercial uses such as urban groceries, coffee shops, cafes and bookstores. The BRT corridor has been identified as the priority location for Urban Neighborhood and is expected to experience many benefits from the application of this new zoning district. In addition to benefiting the BRT system, Urban Neighborhood will allow residents living in Birmingham's LIDAC areas to obtain access to new housing opportunities adjacent to transit, which is why the City is eager to implement a Comprehensive TOD Corridor Plan.

The Comprehensive TOD Corridor Plan will tie the city's current efforts with the long-term goals of the future and provide a strategic plan for successful implementation. For this reason, the plan has tremendous potential to reduce GHG emissions. Furthermore, this emission reduction measure will impact surrounding municipalities throughout the Birmingham metropolitan area. Birmingham taking the initiative to prioritize TOD and reduce GHG emissions through land-use policy will encourage other cities to replicate this strategy and fund their own TOD projects. For Birmingham, a city that cannot depend on state funds for TOD, being a pioneer in TOD land-use policy has the potential to set off a chain reaction across the state of Alabama and in other cities in states with similar state-level restrictions.

2. Impact of GHG Reduction Measures.

2.A Magnitude of GHG Reductions from 2025 through 2030.

2.A.1 City Vehicle Fleet Conversion: 2025 through 2030.

The estimated 2025-2030 reductions for this measure would be approximately 6,150 MT of CO₂, with annual reductions totaling 1,025 MT CO₂. Replacing 180 existing ICE vehicles with EVs is one of the most effective ways for the City to have an immediate impact on GHG reductions, as it does not require design, hiring of consultants, or major policy shifts and can therefore be implemented rapidly

These estimates are based on an assumed 60 miles traveled daily for cars with an annual yearly mileage per vehicle of 15,600. Light trucks are assumed to travel 45 daily miles with an annual yearly mileage per vehicle of 11,700 and were conducted using the EPA Local Greenhouse Gas Inventory Tool with an input of 90 passenger vehicles and 90 light trucks.

2.A.2 Electric Bike Voucher Program 2025 through 2030

Annually, this reduction measure would result in a reduction of 468 MT CO₂, and over a 5-year timeline, this would result in a net reduction of 2,808 MT CO₂. Over 10 years, it would equal a .5% reduction in GHG emissions from the recipients of the Voucher Program.

Research is clear that E-Bikes do not present a 1 to 1 replacement for automobiles but instead offer trip-replacement opportunities, first-and-last mile connections, and opportunities for 2 automobile households to go “car-light” and reduce the number of vehicles they own. A study conducted in the Journal of Transport and Health (The effect of subsidizing E-bikes on mode share and physical activity – a natural experiment) have shown that E-Bike ownership typically results in a mode-share increase of 15% for bicycles and an equivalent drop in single occupancy vehicle trips. Additionally, the same study showed that transit mode -share also increased with E-Bike ownership, indicating that E-Bikes incentivized transit utilization which was previously deemed infeasible by the study participants. This highlights that E-Bike voucher programs may have additional GHG reduction effects which are not accounted for in the table above.

The Rocky Mountain Institute, a non-profit research group dedicated to climate solutions, has published an E-Bike Incentive Calculator to better help cities make policy decisions regarding E-Bikes. The model used assumes that E-Bikes are generally used to replace vehicle trips under 5 miles, which is over half of vehicle trips made in the United States. The calculator features average trip distances and population figures for the majority of large U.S. Cities, and Birmingham is available in the model. As such, the numbers presented on pages 4 and 5 of the Technical Appendix are tailored specifically to Birmingham and showcase the potential of E-Bike vouchers for emissions reduction in the city.

In support of these numbers, The City of Denver conducted follow-up surveys with roughly 1,000 recipients of E-Bike vouchers in their rebate program, the survey found that 65% of E-Bike recipient rode their bike daily, and 90% were riding weekly. The same survey found that income-qualified residents used their E-Bike 50% more than non-income qualified, providing evidence that individuals who are lacking in reliable transportation options especially benefit from E-Bike voucher programs.

2.A.3 Comprehensive Transit Oriented Development Corridor Plan.

The City acknowledges that while a Comprehensive TOD Corridor Plan is a necessary step to transition the Birmingham region away from such high dependence on SOV trips, its ability to impact GHG emissions within a 5-year timeline is limited. As previously stated, it is anticipated that the planning effort itself would take at minimum 18 months and would likely not begin until 2025.

Implementation of the plan would take time as project funding and financing, site acquisitions, re-zonings, and actual full-scale design and engineering, followed by construction of TODs would need to occur. Thus, even on the most aggressive timeline it is unlikely the City would have meaningful implementation of the Plan by 2030. With that, no baseline assumptions of GHG reductions are made for this GHG reduction measure for the 2025-2030 period.

2.B Magnitude of GHG Reductions from 2025 through 2050.

2.B.1 City Vehicle Fleet Conversion: 2025 through 2050.

Based on the assumption of a reduction in 1,025 MT CO₂ annually, we can project that the total GHG reductions from 2025 through 2050 would be 26,650 MT CO₂. While 7-8 years is the expected service life of a fleet vehicle, it is not always the reality as is demonstrated by the City's inventory of existing vehicles in excess of that timeframe. Were the grant-funded vehicles removed from service after the 7-8 year timeframe, it is a reasonable expectation that the City would continue to purchase EV's as their replacement due to the large investment in charging infrastructure that would also be made by this grant and the continued improvements and availability made to EV technology every year.

Detailed numbers from the EPA Local Greenhouse Gas Inventory Tool can be found on page 2 of the technical appendix.

**All estimates are based on the EPA Local Greenhouse Gas Inventory Tool with an input of 80 passenger vehicles and 80 light trucks.*

2.B.2 Electric Bike Voucher Program: 2025 through 2050.

Based on the previously established numbers, the 2025 through 2050 GHG reductions are estimated to equal 12,168 MT CO₂. The long-term magnitude of GHG emissions reductions made possible by an E-Bike voucher program are highly dependent upon the enacting agencies ability to continue to offer an incentive or voucher program to increase the number of E-Bikes in use throughout the City.

This is based on the assumption that recipients will continue to bike around the same mileage each year with their E-Bike. Under a single one-time, \$1,000,000 incentive program model, it is best to view an E-Bike incentive program as a proof-of-concept type exercise that would greatly increase community exposure to E-Bikes.

Detailed supporting numbers from the RMI calculator for the above scenarios are presented in the technical appendix on pages 4-5.

**All estimates are based on the Rocky Mountain Institutes (RMI) E-Bike Environmental and Economics Impact Assessment Calculator for Birmingham, AL.*

2.B.3 Comprehensive Transit Oriented Development Corridor Plan: 2025 through 2050.

If implemented, With the annual estimate of 2.58 MT of CO₂E emissions being reduced along the BRT corridor because of TOD, a projection can be made for CO₂ emission reduction which would be **15.4 MT**. The City has quantified the expected results of the plan using the EPA's TEAM method and is committed to implementing the plan upon its completion.

This projection is based on a combination of land-use policies aimed at increasing density and transit supportiveness along the corridor using EPA's TEAM method and directly reflects the calculations used in the PCAP in section 2.2.4A on page 14.

2.C Cost Effectiveness of GHG Reductions.

The total combined cost effectiveness for all included GHG measures is equal to **\$1,097/MT CO₂**.

2.C.1 City Vehicle Fleet Conversion cost effectiveness.

The purchase of 90 City vehicles and charging infrastructure at \$7,830,000 with a 5-year reduction of 6,150 MT CO₂ results in a cost effectiveness of **\$1,273.2/MT CO₂**.

2.C.2 Electric Bike Voucher Program cost effectiveness.

E-Bike incentive programs are an especially cost-effective GHG reduction measure, based on the estimate reduction of 2,808MT CO₂ in a 5-year period costing \$1,500,000 results in a cost effectiveness of **\$534.2/MT of CO₂**

2.C.4 Comprehensive TOD Corridor Plan cost effectiveness.

Due to the scope of the TOD planning project and the timeline for implementation, no assumptions are made for GHG reductions for this measure in the 2025-2030 time frame.

3. Environmental Results – Outputs, Outcomes, and Performance Measures.

3.A Expected Outputs & Outcomes.

3.A.1 City Vehicle EV Fleet Conversion Expected Outputs & Outcomes.

Outputs.

- Purchase of 180 zero-emission EV vehicles for City fleet use.
- Retirement from service of an equivalent number of outdated ICE vehicles.
- Installation of EV charging facilities for City vehicle use.

Outcomes.

The expected outcome of an influx of EV vehicles to the City's Fleet would be a reduction of 4,505 MT of CO₂E from 2025-2030. This measure would be relatively simple to track by updating the EPA's GHG Emissions Calculator based on the actual number of vehicles received and put into service by the City.

Other outcomes include:

- Better air quality for residents where City vehicles operate regularly.
- Reduced fuel and long-term maintenance cost for the City fleet, resulting in long-term cost savings.

3.A.2 E-Bike Voucher Program Expected Outputs and Outcomes.

Outputs.

- Issuance of 1000 E-Bike vouchers split between income qualified and market rate for Birmingham residents.

Outcomes.

Based on the RMI's E-Bike incentive program, an anticipated reduction of 2,808MT of CO₂E from 2025-2030 would be the expected short term GHG reduction measure. This measure would be tracked via cataloging the number of E-Bike vouchers distributed and then how many of those vouchers were successfully redeemed for an E-Bike. The City could then use the number of redeemed vouchers to update the RMI E-Bike Incentives calculator tool and include those numbers in grant reports. Co-benefits outcomes of this project would be an increase in physical activity and Transportation access for residents.

Other outcomes include:

- Increased mode-share for cycling.
- Increased mode-share for transit due to first-last mile connectivity.
- Increased public support for cycling infrastructure.
- Better health outcomes for voucher recipients due to increased physical activity.
- Support for local bike shops.

3.A.3 Comprehensive Transportation Oriented Development Corridor Plan.

Outputs.

- Comprehensive TOD Corridor plan with site recommendations and concept designs
- Land Use planning recommendations for the TOD Corridor to increase density and improve transit access.
- Concept designs for small scale mobility hubs that compliment the existing BRT, fixed-route system, and on-demand service area.
- Existing conditions analysis of the corridor which identifies the biggest barriers to implementing TOD.

Outcomes.

The outcome that will be achieved by implementing the comprehensive TOD corridor plan as a reduction measure will be the reduction in GHG emissions, quantified as CO₂E. The effect that TOD will have on CO₂E emission reductions was quantified using EPA's TEAM method. TEAM uses transportation sketch modeling, readily available travel activity datasets and EPA's MOVES emissions model to estimate the potential future emission reductions from combinations of Travel Efficiency (TE) strategies (EPA, 2024). TOD land use planning is one of the EPA's recognized TE strategies, consequently this is why Birmingham has chosen TOD as a beneficial reduction measure to be implemented.

TOD Adjacent to the BRT Line		
Year	GHG Reduction (CO ₂ E)	VMT
2025	2.8 MT	13,587
2030	12.9 MT	29,669
2050	322.6 MT	741,738

Above: Potential metric tons of CO₂E reductions based on implementation of TOD adjacent to the BRT line and VMT reduction equivalent of CO₂E, years 2025-2050. 1kg = 3.7km.

TOD in BJCTA Service Area		
Year	GHG Reduction (CO ₂ E)	VMT
2025	29.2 MT	67,022
2030	145.8 MT	335,112
2050	728.8 MT	1,675,564

Above: Potential metric tons of CO₂E reductions based on implementation of TOD across the entire BJCTA service area and VMT reduction equivalent of CO₂E, years 2025-2050. 1kg = 3.7km.

3.B. Performance Measures and Plan.

3.B.1 City Vehicle EV Fleet Conversion Performance Measures.

Performance Measures:

- Number of EV's purchased.
- Number of ICE vehicles decommissioned.
- Number of Level 2 chargers installed.

Plan to track and measure progress:

- Number of EV's purchased
- Miles driven by EV's
- Annual GHG reductions of EVs using EPA calculator.

3.B.2 E-Bike Voucher Program Expected Performance Measures.

Performance Measures:

- Establishment of E-Bike Voucher Lottery system.
- Number of E-Bike vouchers redeemed.
- Follow-up survey results to estimate miles ridden 1 year after vouchers are delivered.

Plan to track and measure progress:

- After the closure of the program, the City could recalculate the GHG reductions using the RMI Calculator based on the exact number of vouchers redeemed for E-Bikes.
- Follow up surveys with voucher recipients to analyze trip behavior.

3.B.3 Comprehensive Transportation Oriented Development Corridor Plan Performance Measures.

Performance Measures:

- The City of Birmingham, BJCTA, and an outside consultant complete the plan
- The plan is adopted by the Birmingham Planning Commission

Plan to track and measure progress:

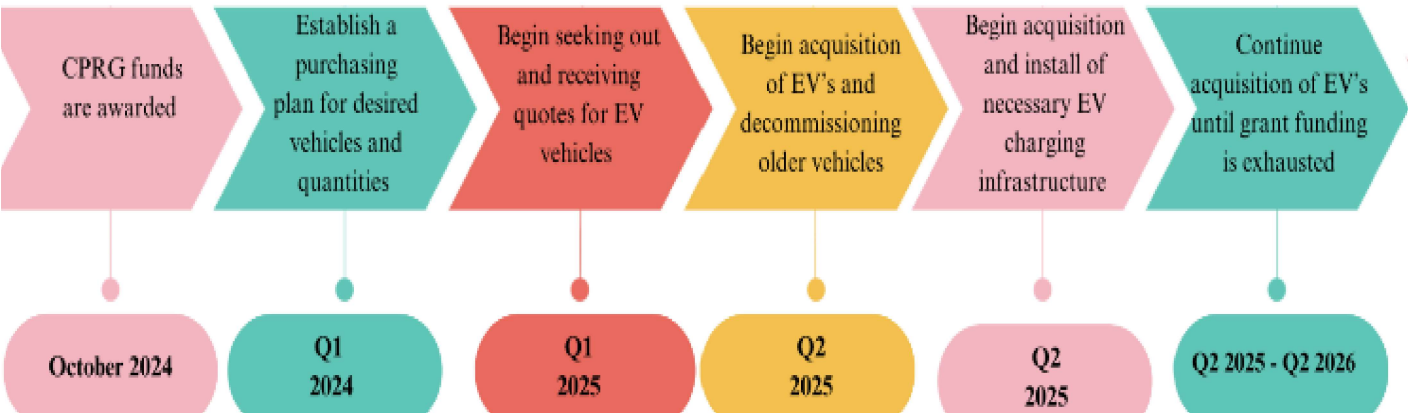
- Ridership counts for BX routes.
- Mapping BRT station locations as they are added.
- Calculating dwelling units per acre along the BRT to determine the increase in density.
- Surveying residents to determine their mode of commuting.
- Quantifying the reduction in CO2E using the EPA's TEAM method.
- Quarterly progress reports
- Final report

3.C. Authorities, Implementation Timeline, and Milestones.

3.C.1 City Vehicle EV Fleet Conversion Authorities, Implementation Timeline, and Milestones.

Cities in Alabama have complete authority to purchase and maintain their own vehicles, as such the implementation of the EV Fleet Conversion would fall completely within the purview of the City of Birmingham and its Department of Public Works. The City has full authority to make purchasing decisions regarding City vehicles.

The timeline for implementation would be as follows:



3.C.2 E-Bike Voucher Program Authorities, Timeline, and Milestones.

The City of Birmingham, along with its non-profit partner identified as either the Community Foundation of Greater Birmingham, or Cawaco would enter into a formal agreement to implement the E-Bike voucher program. The non-profit would become a subawardee of the grant funds and have full authority to administer the program.

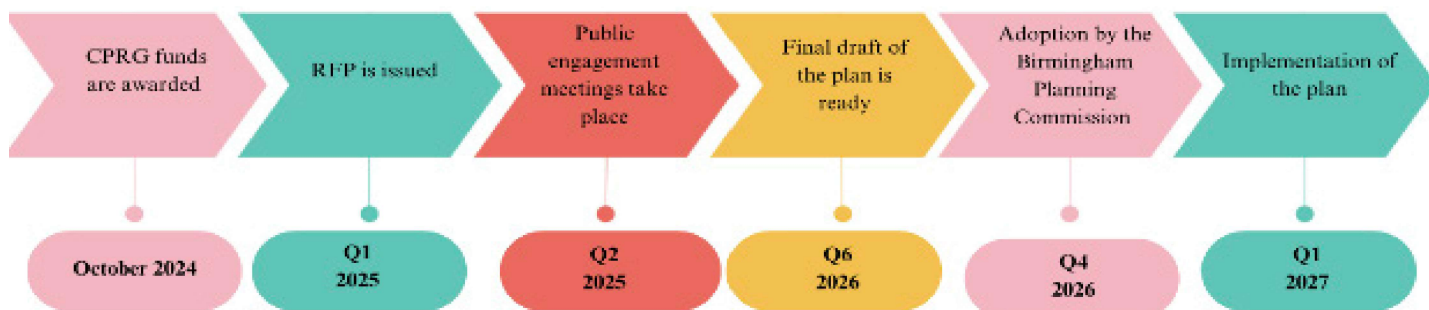
The timeline and anticipated milestones for an E-Bike Voucher Program would be as follows:



3.C.3 Comprehensive Transportation Oriented Development Corridor Plan.

The State of Alabama gives municipalities the authority to carry out planning programs and implement comprehensive plans. This state enabling legislation requires cities to actively consult the plan and regularly review the plan against current policies and best practices. The City of Birmingham will be coordinating the implementation efforts of the Comprehensive TOD Corridor Plan with BJCTA to ensure successful implementation of TOD along the BRT corridor. The City and the BJCTA have full authority to initiate planning efforts.

The timeline for the Comprehensive TOD Corridor Plan would be as follows:



Section 4: Low-Income and Disadvantaged Communities.

a. Community Benefits.

LIDAC Benefits

Today, Birmingham is home to approximately 200,000 residents, 70 percent of whom are Black, and 26 percent of whom live in poverty. Birmingham's median owner-occupied home values is less than half of the adjacent Shelby County and less than 60 percent of surrounding Jefferson County where Birmingham is located. For this reason, the majority of the City is located within a designated LIDAC and this has major revenue implications for the City of Birmingham which struggles to maintain infrastructure and provide basic services. It follows that, it would be difficult, if not impossible, for Birmingham to fund the requested projects from the General Fund and the City must often rely on grants to implement progressive initiatives.

Based on the Climate and Economic Justice Screening Tool, the following census tracts within Birmingham are considered LIDACs. All of the proposed GHG reduction measures would be available in or benefit these tracts.

Census Tracts: 01073002700, 01073000100, 01073005903, 01073011803, 01073011904, 01073000400, 01073002100, 01073002303, 01073002400, 01073005500, 01073000800, 01073001200, 01073012500, 01073003802, 01073003600, 01073013100, 01073004200, 01073005103, 01073005104, 01073013002, 01073005701

The map on page 1 of the technical appendix illustrates LIDAC designated areas within Birmingham.

4.A.1 City Vehicle EV Conversion Community Benefits.

Replacing a portion of a municipality's fleet with EVs can have numerous benefits to LIDACs. The greatest benefit may be in the reduction of GHGs and co-pollutants in the immediate vicinity of where vehicles operate. Exposure to these vehicles' exhaust emissions has both short and long-term health consequences such as increased rates of asthma, susceptibility to short-term illnesses, lung and heart problems, and cancer. Noise pollution is also reduced as traditional combustion engines are known to be louder than EVs. LIDACs are often located near interstates, highways, and other high-traffic roadways, so any reduction in noise can have benefits to the quality of life for those nearby residents. Many vehicle fleet operators are also residents of LIDACs; by increasing the share of EVs, operator exposure to harmful emissions is reduced. Finally, converting City vehicles to EVs could increase LIDAC residents' exposure to EV vehicles and demonstrate that the technology may be more attainable than initially perceived thanks to federal voucher and rebate programs.

4.A.2 E-Bike Voucher Program Community Benefits.

E-Bike voucher programs can greatly benefit LIDACs by removing a large cost barrier to reliable transportation. The City could model its program after the City of Denver's which increases the value of the voucher for applicants whose annual income is a percentage below the area median income. An E-Bike voucher program would have the potential to give these residents a reliable and efficient transportation option for a significantly lower cost than an automobile.

In some LIDAC communities in the Birmingham, as many as 41% of households do not have a single automobile¹— which presents a great challenge for getting to work and accessing healthcare as well as basic goods and services. An e-bike voucher program could target these individuals and provide access to transportation to alleviate these challenges.

In the City of Denver, income-qualified residents were able to receive up to \$1200 for the purchase of an E-bike as opposed to \$400 for non-income qualified residents. Based on current prices for brands available through brick-and-mortar bicycle retailers entry-level, reliable, commuter-oriented E-Bikes can be purchased starting around \$1000. By offering a voucher at \$1000 to \$1200 for qualified residents, the program could enable E-bike ownership for little to no upfront cost to participating residents.

The benefits of an E-Bike voucher program for LIDAC residents are particularly notable when comparing cost to private vehicle ownership. According to data from PeopleForBikes², the typical purchase cost of a commuter style e-bike averages around \$2,600 with ownership cost including charging, maintenance, and eventual battery replacements. In contrast, according to AAA³ the average ownership cost of an automobile in 2022 was \$10,728 a year with the average MSRP of a new vehicle being \$33,301. Based on these numbers, we can assert that with a \$1000 voucher, a qualified resident could own and maintain an E-Bike for \$1,600 a year which is equivalent to the cost to insure a vehicle for a year according to AAA. After the first year, the cost would drop significantly as E-Bikes do not require tags, titles, or insurance; and bikes can be maintained for much lower cost than automobiles.

4.A.3. Comprehensive Transportation Oriented Development Corridor Plan.

In 2014, Smart Growth America⁴ published a study ranking US metros based on how compact and connected they were. The report compared 221 metropolitan areas (1 being the best score and 221 being the lowest), scoring them on density, land use mix, activity centering, and street connectivity. The Birmingham-Hoover metropolitan area came in at 192 out of 221 on the Urban Sprawl Index. It is evident that Birmingham has a history of

1 <https://www.census.gov/programs-surveys/acs/data.html>

2 https://peopleforbikes.cdn.prismic.io/peopleforbikes/a2665293-d229-434b-832a-a0784b2edfd5_ebikeincentive_onepager_2022.pdf

3 <https://newsroom.aaa.com/wp-content/uploads/2022/08/2022-YourDrivingCosts-FactSheet-7-1.pdf>

4 <https://smartgrowthamerica.org/resources/measuring-sprawl-2014/>

planning for cars over people, but this is something that a Comprehensive TOD Corridor Plan will change. TOD helps reinforce a sense of place and offers a higher quality of life by generating compact, mixed-use communities that allow people the option to choose various modes of transportation. TOD helps to mitigate the negative impacts of sprawl by increasing density and allowing for more focused development along transit corridors.

The majority of neighborhoods in Birmingham are considered to be LIDACs by definition, and experience ambient air pollution from the transportation sector, and the entirety of the Birmingham Xpress BRT route falls within LIDAC communities. These pollutants cause chronic lung disease and eye problems, as well as other health-related issues. The implementation of the Comprehensive TOD Corridor Plan has the ability to reduce these GHG emissions caused by transportation and provide these LIDACs with some abatement to the air pollution they experience. With the Comprehensive TOD Corridor Plan reducing 2,581 kg of CO₂E along the BRT corridor, this will equate to 13,587 miles worth of vehicle CO₂ emissions per year. The reduction of these GHG emissions is the chief benefit for LIDACs since a reduction in air pollution will begin to mitigate the long-standing public health disparities that these residents face, as well as reduce their susceptibility to climate change impacts.

The second benefit of implementing a Comprehensive TOD Corridor Plan will be improved access to services, jobs, and amenities for Birmingham residents. The City's overarching goal for BRT is to increase connectivity, while maintaining short lead times during trips. The City has identified key nodes for future BRT stations, as well as desirable destinations that people want and need access to. These key nodes are widely traveled roads, such as Parkway East, Green Springs Highway, and 1st Avenue North. In order to make these expansions possible the City must have a Comprehensive TOD Corridor Plan that unites the ongoing progress with the demands of the future.

4.B. Community Engagement.

The City is committed to using all available resources for public outreach and community engagement for the proposed GHG reductions measures. The City will ensure participation and focused outreach is done in LIDAC communities and will offer a variety of input methods when viable to ensure a broad and diverse range of residents are able to make their voice heard. Specific engagement strategies for each GHG reduction measure are listed below.

4.b..1 City Vehicle EV Fleet Conversion Community Engagement.

Due to the nature of this measure, community engagement is not necessary since it involves the routine day-to-day operation of the City's vehicle fleet.

3.C.2 E-Bike Voucher Program Community Engagement.

Strong community engagement will be critical to the success of an E-Bike voucher program and the City would ensure that a number of different outreach methods are used to inform residents about the program. The following is a list of public outreach activities that the City would seek to include in a public outreach campaign for E-Bike Vouchers:

- Informational website on the E-Bike Voucher Program.
- Tabling at community events throughout the City to inform the public of the program.
- Interviews and segments with local TV and radio stations.
- Information regarding the program in City newsletters.
- Outreach to local cycling enthusiast groups.

- Working with the selected non-profit to target LIDACs.
- Distributing information about the program to Neighborhood organizations.
- Working with participating bike shops to host a number of E-Bike demos in LIDACs to familiarize residents with E-Bikes and educate them on the program.

3.C.3 Comprehensive Transportation Oriented Development Corridor Plan Community Engagement.

To inform the development of the plan, the City will invite community members and other stakeholders to consult on the plan's progress. The consulting team, in collaboration with City Planning Staff would conduct the bulk of community engagement meetings. The City would budget for a minimum of three community engagement meetings to be facilitated by the consultant. Each of these meetings will be exclusive to certain quadrants of the city, one North-South meeting, one East meeting, and one West meeting. The City will rely on Neighborhood Association officers, Community Resource officers, Implementation Committee members, City Councilors, and social media to mobilize residents to attend these meetings. In addition to these resources for notifying the public, the City will also create a stakeholder group to engage for input on the TOD corridor plan. The stakeholder group will include leaders in the transportation sector, transit system users and community activist groups that advocate for LIDAC residents and are familiar with what their needs are.

In addition to traditional in person meetings or town-halls, the City would also utilize online engagement tools such as a plan website, surveys, and webinars.

5. Job Quality.

The City is committed to generate high quality jobs with a diverse, highly skilled workforce and support “high road” labor practices.

Through the Department of Innovation and Economic Opportunity, the City funds projects that provides individuals with the necessary skills and knowledge to participate in the workforce, and it helps to create a pool of skilled workers that businesses need to grow and innovate.

The Mayor leverages his state and national platforms to build public-private partnerships that advance economic inclusion and racial justice.

The City has launched several public-private partnerships to advance economic inclusion in the region. To ensure the longevity of these partnerships, the City and its partners have established independent 501(c)(3) organizations to ensure program delivery is both politically neutral and sustainable. Example past partnerships include:

Partnership	Description
Birmingham Promise (2019)	Provides earn-and-learn apprenticeships with employers and last-dollar scholarships to attend any Alabama two- or four-year college; employers commit to hiring graduates
Bham Strong (2020)	Supports small businesses, redeploys displaced workers, and rebuilds the community in the wake of the early economic shocks of the COVID-19 pandemic; 90 businesses and 1,100 workers supported

6. Programmatic Capability and Past Performance.

The City has a long history of implementing grants, below are some examples of grants that have been successfully implemented and completed.

Project Title	CFDA#	Funding Agency	Contractor/ Agreement #	Description	Contact	Status
Intermodal	20.5	USDOT	AL-03-0035	To build an intermodal facility	Charles Chui (FTA)	Completed and Implemented
Intermodal	20.5	USDOT	AL-04-0026	To build an intermodal facility	Charles Chui (FTA)	Completed and Implemented
Intermodal	20.5	USDOT	AL-95-X008-00	To build an intermodal facility	Charles Chui (FTA)	Completed and Implemented
BRT	20.933	USDOT	5822-2017-1	To create a bus transit system	Charles Chui (FTA)	Completed and Implemented
2013 CMAQ-Flex for In-town Transit	20.933	USDOT	AL-95-X007	To purchase buses for the bus transit system	Charles Chui (FTA)	Completed and Implemented

6.A.5 Reporting Requirements.

The City of Birmingham strives to maintain satisfactory progress when it comes to fulfilling reporting requirements for grant awards. All reporting has been successfully completed and submitted for the City's past awards. Progress reports and updates have been provided as required and requested for all of the City's current awards.

6.A.5 Staff Expertise.

Birmingham is fortunate to have qualified staff and resources that will ensure the success of implementing the proposed GHG reduction measures. Out of Birmingham's 11 governmental departments, five will be directly involved in overseeing aspects of the CPRG Implementation Grant. These departments are: Planning, Engineering and Permits, Transportation, Community Development, Public Works and the Mayor's Office. The staff responsible for implementing the GHG reduction measures are all highly qualified individuals with graduate degrees in their respective fields. Most City staff involved with implementation have professional certification (AICP, PE, PLA, CFM) and those that do not are candidates for certification. In addition to City staff, Birmingham has engaged several well-established community partners that will be essential in achieving implementation; these community partners are: BJCTA, Cawaco, and the Community Foundation of Greater Birmingham. The combined years of expertise and available resources between the City of Birmingham and its community partners will unquestionably lead to successful implementation of the chosen GHG reduction measures.

7. Budget.

7.A Budget Detail.

See the associated Budget table for a detailed budget breakdown.

7.B Expenditure of Awarded Funds.

Recognizing the immediate need to begin implementing GHG reduction measures, the City is committed to the expenditure of awarded funds in a timely manner and will strive to meet the established timelines in section 3.

7.C Reasonableness of Costs.

7.C.1 EV Vehicle Fleet Conversion Reasonableness of Cost.

With the requested \$7,830,000 for this reduction measure vehicles acquired from grant funding will seek to be a direct 1:1 modern replacement of aged vehicles in need of retirement which are still in service today. For example, a 1990's Ford Taurus could reasonably be replaced with a compact sedan EV or a full-size sedan or compact crossover SUV likewise, a full-size pick-up truck could be replaced with a full-size pick-up EV such as the example F-150 Lightning. Replacing vehicles in this way ensures that costs remain reasonable.

Additionally, the City would use all available government purchasing options to ensure EVs are added to the fleet as efficiently as possible. Vehicles purchased would exclude luxury bands. The City would seek out only the necessary or base-level trim packages without extraneous add-ons or upgrades.

With the \$450,000 allocated to level 2 commercial chargers the City would concentrate charger location as much as possible to create cost-savings related to wiring, transformers, or other electrical upgrades.

7.C.2 E-Bike Voucher Program.

Based on other cities which have implemented E-Bike voucher programs an estimated \$250,000 is allocated for a third-party consultant to administer the program. An additional \$110,000 is estimated for administrative fees and to cover any federal audits which are triggered for the selected non-profit. This is based on other grant program administration costs which have been administered by Cawaco, one of the potential non-profit partners with whom the City could enter into an agreement. A detailed breakdown of cost is located in the Budget Table.

7.C.3 Comprehensive Transportation Oriented Development Corridor Plan.

The City of Birmingham is requesting \$500,000 in CPRG Implementation funds to finance the Comprehensive TOD Corridor Plan. The City has previous experience budgeting funding for planning efforts and is confident that this budgetary estimate will adequately cover the cost of this implementation measure. Due to the extensive scope of the TOD Corridor Plan, the funding request has been primarily based off of the 2013 Comprehensive Plan total cost, which was \$570,000. One of the recommended action items in the 2013 Comprehensive Plan was to establish individual community framework plans for Birmingham's nine framework communities. These framework plans provide each community with a clear vision of what residents want for their community over a period of ten years. These nine framework plans have an average cost of \$240,000 per framework area. The City, along with a cooperative coalition of partners, also funded the 2019 City Center Master Plan for \$549,908. This master plan is also comprehensive in scope and provides a strategic plan for the city center that looks to the next 10-15 years. Taking into account inflation and the consideration that the TOD Corridor Plan will primarily focus on TOD in priority areas, the City believes \$500,000 is a fair and equitable budget for this reduction measure based on previous planning costs.

Once the city has selected the qualified consultant from the RFP process, a contract will be issued for the outside consultant to complete the Comprehensive TOD Corridor Plan. This contractual agreement will be for the span of two years and will entail the contractor providing goods and services to the City to complete this reduction measure. The services being provided will be: analyzing existing conditions, identifying areas that are rife with opportunity for TOD and transit connectivity, determining strategic locations along the BRT corridor for small-scale intermodal mobility hubs, and guidance on how to increase density along the BRT corridor. The deliverables will be: an existing conditions study, conceptual designs for small-scale intermodal hubs, and the complete final product of the Comprehensive TOD Corridor Plan. The contract will payout \$200,000 for the first year of services and \$300,000 for the second year of services, totaling the \$500,000 budget. Additional costs, such as travel, fringe benefits, supplies, etc. are costs that the consultant will determine, and as a result, these costs will be built into the overall contractual fees.